INDIA RUBBER WORLD

CAOUTCHOUC GUTTA-PERCHA

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## OUR FIRST SCORE OF YEARS.

IN appealing again to the trade for support THE INDIA RUBBER WORLD would not imply any particular merit in the fact that twenty years of continuous publication have been completed, and still less from the control of the paper having remained constant during the same period, and its actual making in the hands of a staff so little changed.

And yet a period of twenty years counts in the career of any business undertaking; it counts in the life of the greater and the lesser journals; twenty years are an item in estimating the good will of an institution. Standing in the trade for so long a time gives the management an acquaintance with its interests not to be gained in a day, and affords an opportunity for usefulness which, if taken advantage of, is widened with the completion of every year.

Not the least element of such success as THE INDIA RUBBER WORLD may have attained is credited in this office to the fact of the management having been able to carry out the declaration of principles laid down in the first number, the chief item of which was independence from control by any business house or organization or combination. This declaration is renewed, and the maintenance of the principles of ownership by the management alone will be the first aim of THE INDIA RUBBER WORLD in future as in the past.

The continued coöperation of the trade is solicited, since this is the basis of what merit THE INDIA RUBBER WORLD may have as the rubber man's newspaper and a record of its technical progress. With renewed assurances of distinguished appreciation of the Patrons of this paper, the Editor hopes to continue to command their esteem by making of it an institution of practical value to the trade.

## Twentieth Anniversary Number

**First Issue, October 15, 1889**

## WHAT WE HAVE RECORDED.

DEVELOPMENT on a commercial scale of rubber culture, based upon scientific study of planting, latex extraction, and treatment of latex. Large companies organized for carrying on such work, and systematic management. Local and international rubber exhibitions for the promotion of the cultural interest. Introduction of mechanical devices and apparatus for dealing with latex. Rubber planting shares on the leading *bourses* in Europe.

Interest created in the Amazon region in more systematic dealing with rubber production. Large corporations succeeding the haphazard work of individual and irresponsible *seringueiros*. The Amazon taking a stand to withstand the competition of the planting interest in British Asia and in the colonies of continental powers. Movement to improve transportation facilities in the Amazon region.

Rubber discovered in the Congo region and elsewhere in Africa, with the rise and decline of production in the different colonies; creation of new rubber markets in Antwerp and other European capitals; the Congo "red rubber" scandals, calling attention to the hardships attending the collection of forest rubber in any country, with the probable result that civilized people will insist upon their amelioration, whether in Africa or America.

Scientific rubber production introduced into Africa in the colonies of all the Powers, particularly cultural schools by the French and planting in the German possessions.

The utilization of rubber yielding species not before of recognized value, including the guayule shrub in Mexico, the product of which now amounts to millions of pounds yearly.

The coming of the pneumatic tire, first for bicycles and later for the automobile, creating the largest single feature of rubber goods production. The consequent development of means of travel, forming a basis for important new industries, the whole affecting social life in civilized countries and promoting travel in hitherto

remote lands. Other than pneumatic tires, though in use before, have come into an immensely increased demand, with important commercial results.

Introduction of miscellaneous rubber goods into many countries where their use before was unknown or not usual, with a generally beneficial result to the consumers, and increased profits both to the producers of the goods and the supplies of crude rubber. The use of rubber footwear practically has been introduced into Europe in this period even in the countries longest accustomed to rubber goods in general.

Improvement of rubber reclaiming until the product has come to be utilized in the production of practically every line of rubber goods on the list. Today there are grades of reclaimed rubber selling at higher prices than grades of crude in large demand.

Perfection of the acid curing process in the production of many lines of specialties with results not attainable so satisfactorily under any other system, particularly in druggists' sundries and such like goods.

Disposition of people engaged in the rubber interest in any way to write on the same, and of people in and outside of the industry to read on the subject; the appearance of a mass of books, reports, and pamphlets, and the constant reporting of rubber news in the daily journals and leading periodicals in every field.

## TWENTY YEARS IN JAPAN.

THE progress which the Japanese have made in rubber forms one of the interesting chapters in the history of the industry for the last two decades. At the beginning of this period there was not in Japan anything which in any other country would have been called a "rubber factory." A few determined pioneers, however, were using rubber, and getting commercial results from it—small, to be sure, but of so practical a character as to serve as the foundation of creditable manufacturing establishments today.

The beginnings of the industry in America and in Europe were characterized by inventions so numerous as to burden the patent office records; by a continuous story of originality in mechanical and chemical fields. It has been charged that the Japanese have invented nothing in the rubber manufacture, but have been mere adapters of foreign ideas. Why should they not profit by the work of others, instead of waiting to work out a rubber industry of their own?

The Japanese have been adapters, but not more than has been common in the building up of the rubber industry in the United States, Great Britain, and so on. In fact the growth of the industry has been based upon friendly international relations, due to the fact that these are all "Western nations"—one family, as compared with the racial differences which divide Orient and Occident. And here let it be said that ingenuity may be shown even in "adaptation." If no Japanese can claim as yet to have invented any rubber machine or process of note, they have shown great skill in getting results from foreign inventions, worked often under unfavorable circumstances. If a machine broke down, thousands of miles from suitable facilities for its repair, the machine was repaired none the less; if process secrets were guarded from them, they have found out by patient experimentation how to get the results aimed at. They have thus shown not only real ingenuity, but indomitable industry.

The substantial basis upon which Japan's rubber interest has been founded is suggested, among other things, by the extent to which foreign manufacturers already have been establishing themselves in the Mikado's country. If no prospect existed of the latter being able in time to supply their own wants in rubber goods, why should important concerns abroad take the trouble to build branch factories in Japan, even if there are customs barriers to face?

Considering everything here set down, it must be admitted that Japan has not made a bad showing in connection with rubber in the last twenty years.

## MR. TAFT ON ADVERTISEMENTS.

THE new President of the United States, in the exercise of his constitutional duty periodically to advise the Congress on the state of the Union and to make suggestions relating thereto, very properly discusses the perennial deficit in the postal accounts. From the beginning the postoffice department has been regarded, not only as a non-business enterprise—that is, one not conducted for earning profits—but as a public utility to be fostered, even at the expense of the general budget. There can be no question that the liberal extension of the service to remote regions has tended mightily to the more rapid development of the country, to the diffusion of intelligence, and to making the enormous American republic homogeneous to an extent not equaled in any other great nation.

There may be a sound argument for making the users of the post-office pay the cost of the service, as in the case of the patent office, even though the army, the navy, the judiciary, the system of education, the scientific departments, and all the other branches of administration are conducted regularly at a loss—if the tangible results, translated into terms of public revenue, be compared with the actual cost in dollars. Where change shall be made in the existing system, however, it is not the purpose of this article to suggest. We elect legislators for such work.

It is interesting to note that President Taft dwells upon the theory—though it is not clearly demonstrated in his message—that newspapers and periodicals pay less than their just proportion of the cost of transmission of the mails. So far as we can see from his contention, if newspapers paid their due share, letter postage could be reduced, and yet allow the treasury a handsome sur-

plus from the operation of the postal service. Again, THE INDIA RUBBER WORLD has no desire to express any opinion in the premises. We pay cheerfully the postage rates current, and don't know whether it is too much or too little. Probably no one knows, or ever will.

The point of the President's argument, however, lies in his reference to the "proportion of advertising to reading" in certain classes of printed mail matter. Well? Mr. Taft does admit "the spread of intelligence which a low charge for carrying newspapers and periodicals assists." But is intelligence spread only by "reading matter?" The "Annual Report of the Secretary of War" of the United States doubtless is the most voluminous year book the world has ever seen—contributed to by thousands of able officers and scientists. But if a set of the volumes of the war report were mailed to every household in America we do not believe the spread of intelligence thereby would be comparable with that from the ordinary distribution of the advertising pages of any leading magazine —to say nothing of the reading pages. The mails, by the way, are burdened every year with millions of war reports and other public documents—all without advertisements—on which no postage is paid, while the advertisement carrying periodicals pay many millions of dollars to the post-offices.

We fear that the President has not been well advised as to the educative nature of modern advertising. Besides, readers of advertisements throughout the land are moved to write tons of prepaid letters to advertisers, giving rise to more tons of mail matter—also well prepaid—in response thereto. The postal budget this year was $203,562,383, compared with only $30,041,983 thirty years ago. We do not believe that the increase would have been one-tenth as great but for the circulation of newspapers with advertisements for a character to develop trade and add to the volume of and revenue from the mails.

THE CITY OF MANAOS, TWENTY YEARS AGO, probably never had been heard of by one rubber man in a hundred. Ten years ago Manàos was shipping direct more rubber than Pará. It had become a city, connected by ocean steamers with New York and European ports. Its citizens had the advantages of waterworks, electric lighting, street railways, and the like. And now an international rubber conference is about to be held in Manàos. It may not be a large affair, but th eFar Eastern rubber situation, which it has been called to face, had very small beginnings.

IF THE PRICE OF RUBBER REMAINS STATIONARY at the present high level much longer, the manufacturers and buyers of their products may become so accustomed to the situation as not to care whether a decline ever comes. By the way, the first number of THE INDIA RUBBER WORLD, in its review of the crude rubber market, noted the complaints of manufacturers at having to pay more than 60 cents a pound. In early issues of the paper appeared a series of interviews with manufacturers on the crisis in the industry threatened by the approach of crude rubber to the 75 cents level. Later, when rubber actually rose to $1, it caused little concern, because the advance had been discounted. The salient feature of the crude rubber situation in future will be greater stability than in times past, due to reasons about which the trade can keep better informed—and this is of more importance to the trade than to be able to buy rubber at any particular price, low or high.

WE CONTINUE TO BE SURPRISED at the amount of energy expended in the effort to produce synthetic rubber. Suppose it were produced, it would be of importance only to the extent that it could be exchanged for gold—or its equivalent. There are still many people in the world who have little or no use for rubber, but everybody can use gold. Then why do not the busy investigators, instead of aiming at artificial rubber, revive the time-honored game of trying to make gold from the baser metals?

THE DEATH OF THE KING OF THE BELGIANS recalls not alone the Congo question, but to the mind of the Editor it recalls "stopping the press" in THE INDIA RUBBER WORLD office—it was back in April, 1890—to make room for a report just received regarding Stanley's discoveries of rubber in the Congo Free State. This section of Africa, he declared, would become "the rubber reservoir of the universe." From that date until this there has scarcely been an issue of the paper without references to the Congo region and its rubber—not discussion or criticism or sentiment, but *news*. And this month is to be reported the death of King Leopold, whose name has been connected so much with the subject of rubber. THE INDIA RUBBER WORLD has not devoted itself to any particular rubber yielding country, but has attempted to keep its readers informed regarding them all. But at this moment, when the files of the paper can be pointed to as embracing the story of Congo rubber from the first word, it seems in order to use this fact on which to base the reminder that, whatever else THE INDIA RUBBER WORLD may have been, it has always been a *newspaper*.

## VIANNA AND OTHER SPECULATORS.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I notice the publication in your issue of November 1 (page 59) referring to Mr. Vianna, of Mello & Co., in Pará, as the person who acquired such notoriety in years gone by through raising the prices of rubber up to $1.20 or thereabouts. This is wrong. The unfortunate gentleman connected with this attempt to raise rubber prices is no longer among the living and it is not he, therefore, who is now a member of the Mello firm, as your paragraph leads one to believe, but is the surviving brother. The former was Joaquim Candodo Vianna, Baron de Gondoriz, while the survivor is Mr. Joaquim Guilhermé Vianna.

Mindful of the rule, "speak no ill of the dead," I should be pleased to see the rubber press refrain from referring to this former able business man as an *arch speculator*. The writer of these lines has heard from such an authority on rubber as Mr. Charles R. Flint that, had Mr. Vianna been able to "hold his own against banking odds," manufacturers would have seen their way to buy rubber at the price level planned by him within eight days of the date of the crash. Upon the other hand, the writer has heard it from other notable authorities that Mr. Vianna's plans were frustrated by parties in the trade with stronger financial backing, who frightened manufacturers from the market with offers of rubber for future delivery at much lower figures than Mr. Vianna had tried to obtain. Now the facts of the case are that the one was no more an arch speculator than the other, only the European firm was so much better backed financially and thus had the means of "taking the ground from under Vianna's feet."

If any one merits the title of arch speculator on the Amazon, the palm must be given with all honors to the head of a certain

firm who is credited with having driven the poor producers of rubber up river to sell a very large portion of their 1907-08 crop at about 66 cents per pound, when, as a matter of fact, he had sold most of it ahead of purchasing the same at an average of $1.10.

Like Vianna the firm last referred to "counted without their host." Presuming that the native houses had no substantial resources, and no personal assistance, and that no government help could be counted on in the crop to follow, they carried the "bear" game to extreme. The consequences were (1) the establishment of branches of the Branco do Brasil on the Amazon, authorized to make liberal advances on rubber to the original holders—*i. e.*, producers, and (2) the promulgation of the syndicate law, which, like the sword of Damocles, is only suspended above the heads of operators venturing to carry the bear movement to excess—ready to slash right and left wherever government assistance can be carried. Hence the failure of any later bear movements.

I doubt very much whether manufacturers would reconcile themselves quietly to the price of rubber at $2 as predicted by you so far back as 1906. But the sooner they do so the better, for obvious reasons, among them being the fact that so long as the holders of rubber are not driven to desperation for financial assistance (and those of the Amazon regions are not at the present time), and as long as the demand for that commodity continues to succeed the supply (as it also happens at the present time), so long will the prices range at $2. And if it is proved that, even at these figures, manufacturers can still make money, it is difficult to understand why they should quarrel with present prices. It is these high prices and strong financial support that will stop speculation.

A. PARAENSE.

Pará, Brazil, December 1, 1909.

# Growth of the Japanese Rubber Interest.

*By Kenzo Okada (Tokio).*

LET me have the honor, from across the Pacific, to congratulate THE INDIA RUBBER WORLD upon its Twentieth Anniversary. I am happy to have such a chance to introduce our rubber industry to the Occident.

The Japanese industry is growing year by year, and especially having been accompanied by the development in all lines since the Russo-Japanese war, the manufactures of rubber goods and electric insulated cables have been improved exceedingly. The works engaged in this business have been enlarged and a number of others established lately.

Among the new ones are Messrs. Sumitomo Cable Works in Osaka, and The Nihon Densen Kaisha (Japan Cable Works, Limited) in Tokio. Though only a short time has passed since their establishment, they are working on a large scale. Yet their supply of products is not sufficient for the demand. Messrs. Mitatsuchi Rubber Works have lately established a rubber boot and shoe department. The machinery for the purpose has come and they are fitting up with this, while extending their waterproof clothing department. Yokohama Densen Kaisha (Yokohama Electric Wire Co.) have extended their scope since the fire last year, having fitted up the machinery under the expert Mr. Y. Hata's supervision.

Tokyo Gomu Kaisha (Tokio Rubber Co., Limited) are planning to establish a plant to make mechanical rubber goods, waterproof goods, and rubber boots and shoes, with a capital of 1,200,000 yen [= $498,400]. The largest cable works in the country now are Messrs. Fujikura Densen Gomu Kaisha (Fujikura Insulated Wire and Rubber Co.). They have a great reputation, and have been appointed manufacturers by the imperial department of communication. They are the only approved makers of rubber insulated wire for the government. They are producing a large amount of high tension cable by the order of the naval and military departments at present, and they have intended to extend their works, for which they are receiving a large amount of machinery from their foreign suppliers.

When the import duties for rubber manufactures was revised, the levy was increased little by little, and there is an expectation that a further increase will result from the coming revision. Accordingly some rubber manufacturers in Europe have come to Japan to engage in this business here, rather than pay higher import duties. Messrs. J. G. Ingram & Son, of London, have established a factory at Hiogo to make surgical rubber goods. The Dunlop Pneumatic Tyre Co. have established large works near Kobe, which are now almost in working order.

Since the sudden rise of the price of crude rubber, last spring, high quotations have been maintained continually to this day. At present, Upriver fine Pará is quoted at 4.90 yen per pound [= about $2.40, gold], and 190 yen per picul for Borneo No. 1. In spite of the high quotation the demand is increasing more and more, and our rough calculation for the rubber imported in this year indicates 1,000,000 yen [= $498,400]. Three-fourths of the amount is handled by Messrs. Dewette & Co., Yokohama, importers of crude rubber and rubber chemicals. They import Upriver fine Pará, and Plantation sheet, and Borneo mainly, and some of the African product.

Throughout the country are found good sources of water, that will bring great development of the industries applying hydro-electricity in the near future. For this reason the demand for insulated wire will be largely increased together with that of the jinrickisha tires for which rubber will replace steel. Moreover, the demand for toys, army supplies, and the like grows so steadily that the rubber industry must develop day after day. Thus our business doubtless must have great influence hereafter as a factor in the national industry.

JAPANESE IMPORTS OF CRUDE RUBBER AND GUTTA-PERCHA.

| | 1908. | | 1907. | | 1906. | |
|---|---|---|---|---|---|---|
| | Quantities (Kin) | Values (Yen) | Quantities (Kin) | Values (Yen) | Quantities (Kin) | Values (Yen) |
| British India | 22,469 | 35,720 | 39,126 | 53,106 | 31,256 | 41,151 |
| British Straits | 219,244 | 205,161 | 244,465 | 315,265 | 260,588 | 327,029 |
| Dutch India | 313,534 | 335,545 | 94,621 | 133,486 | 29,279 | 42,242 |
| Philippine Islands | ..... | ..... | 3,488 | 5,571 | ..... | ..... |
| Great Britain | 109,336 | 184,293 | 55,535 | 97,684 | 73,983 | 73,281 |
| Germany | 3,497 | 8,022 | 6,767 | 11,357 | 4,509 | 9,054 |
| United States | 98,889 | 101,291 | 72,015 | 145,841 | 31,124 | 83,493 |
| Other countries | 12,668 | 16,546 | 3,827 | 8,404 | 13,557 | 6,939 |
| Totals | 779,647 | 886,578 | 519,844 | 770,714 | 454,296 | 585,189 |

[NOTE.—The *kin* is nearly the same as the Chinese *picul*, and roughly is 1⅓ English pounds. The *yen* is equal to 49.8 cents, gold.]

IMPORTS OF INSULATED ELECTRIC WIRE.

| | 1908. | | 1907. | | 1906. | |
|---|---|---|---|---|---|---|
| | Kin | Yen | Kin | Yen | Kin | Yen |
| Great Britain | 1,854,302 | 860,872 | 998,432 | 647,297 | | 535,819 |
| France | 413,409 | 108,736 | 319,497 | 104,710 | | 35,181 |
| Germany | 890,570 | 229,309 | 286,161 | 124,072 | | 47,969 |
| Italy | 27,337 | 18,980 | 18,164 | 17,687 | | 5,283 |
| United States | 406,360 | 228,680 | 321,472 | 234,403 | | 332,282 |
| Other Countries | 597 | 275 | 1,420 | 1,399 | | 631 |
| Total | 3,592,575 | 1,446,852 | 1,945,146 | 1,129,568 | | 957,165 |

PARA rubber seed is now advertised by important plantations in the Malay States at $2 (silver) per 1,000, packed in bags, and $2.50 when packed in cases, at the nearest railway station. Of course higher prices are charged for seed packed for shipment for long distances.

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I AM a good deal like a famous epicure, whose taste and judgment was being criticised. "He doesn't know the difference between a brook trout and a rubber boot," said the critic. "Why should I?" said the gourmet, "I never tasted a rubber boot!"—*Rubber.*

# The German Rubber Industry.

THE india-rubber industry in Germany had its beginnings not long after the discovery of vulcanization, and in advance of several other countries in Europe in which rubber goods are now made. It will not be attempted to point out here the pioneer in the German rubber field, but only to mention some of the important early workers in it. A lively interest in rubber, in fact, was manifested in German scientific circles years before the industry had a practical basis. It is worth while to mention the pamphlet brought out in Berlin in 1832 by Dr. F. Luedersdorff, the English edition of which bears the title, "The Solution and Reproduction of India Rubber." Luedersdorff treated of the action of sulphur on india-rubber, and there were not lacking those, in Charles Goodyear's lifetime, who held that in his publication the German chemist had anticipated the basic principle of vulcanization. Luedersdorff's pamphlet, in fact, was offered as evidence by the defendants in Charles Goodyear *et al. v.* Beverly Rubber Co., a patent infringement suit tried in Boston in 1859.

The history of the rubber industry in Germany, if written in detail, would embrace a reference to the Englishman, Mr. Elliott, who in 1849 founded on the Spree a small factory from which has developed the important Vereinigte Berlin-Frankfurter Gummiwaren-Fabriken, now capitalized at 3,500,000 marks [=$833,000]. There is to be mentioned, too, the late Senator Carl Maret, who in 1856 returned to Germany from a sojourn in America during which his attention was attracted to rubber, and he coöperated in starting, in the same year, the now great Vereinigte Gummiwaren-Fabriken Harburg-Wien, the largest rubber manufacturing establishment in Germany. It is not so long since THE INDIA RUBBER WORLD (October 1, 1909—page 15), upon the occasion of the death of Dr. Heinrich Traun, outlined the founding of the hard rubber industry at Hamburg, at the same time it was being developed in America, and by interests then practically identical.

There is no intention here to deal with all the rubber factories in Germany, but only to illustrate the enterprise and progressiveness which ever have characterized the industry in that country. The rubber trade has shared in the general industrial growth which in Germany followed the establishment of the empire, and today the Germans hold first rank among European rubber manufacturers in respect to volume of business done.

THE LATE SENATOR DR. HEINRICH TRAUN.
[Founder of Dr. Heinrich Traun u. Söhne, Hamburg. Distinguished in the hard rubber industry.]

But there are other considerations. The ingrained love of science in the German has brought the resources of chemistry to bear upon the rubber industry to a notable extent, not in that country, but in general. While rubber factory superintendents elsewhere were chary about using African sorts, for example, when they were first introduced, German experts discovered and pointed out how good results might be obtained from them. The broad effect of such investigations is seen in the general use in the industry of all sorts of rubber, instead of the manufacturers being confined practically to Pará rubber alone, as in the beginning. Otherwise it is possible that the better grades of rubber might ere this have figured at twice the highest prices ever reached, or even more.

The importance of the chemist in the rubber factory was first appreciated to an important extent in Germany, and today the influence of such recognition is felt in every country where rubber goods are made. It is true that Charles Macintosh, the pioneer English rubber manufacturer, was a scholarly man, and notably a chemist, which fact doubtless aided him in his rubber researches. But many of his successors in the industry, in England and elsewhere, not only possessed no knowledge of chemistry, but there was a period when "practical" men dealing in rubber evinced a lack of respect for the scientist. Charles Goodyear, for example, was wholly without a knowledge of chemistry when he set about the work which ended with his accidental discovery of vulcanization. And for nearly a half century there was hardly one head of an important American rubber company who had a scientific training.

Compared with this situation, one may refer to the late Heinrich Traun, who, before taking a position in the German rubber factory which later he made famous, completed a scientific course in a leading German university, after which he did professional work as a chemist in different countries. Again, mention may be made of Professor Dr. Adolf Prinzhorn, lately retired from the management of the Continental Caoutchouc - und Guttapercha - Compagnie, upon whom the two titles he now wears were conferred from a high source, in recognition of his scientific work in connection with rubber.

THE LATE SENATOR CARL MARET.
[First president of the Verein Deutscher Kautschukwaren-Fabriken. Director of Harburg and Vienna India-Rubber Works.]

In connection with this subject mention must be made, also, of the late Carl Otto Weber, PH. D., whose fame as a rubber chemist became worldwide.

The "technical director" now has an established position in every German rubber factory of importance, to which policy is due, no doubt, much of the success of the industry in that country. And the example of the Germans has been followed in other countries, notably in the United States, where the old-time "rubber kings" seemed rather proud than otherwise of their

EMIL SPANNAGEL,

[Director of Vereinigte Berlin-Frankfurter Gummiwaren-Fabriken.]

success in working by "rule of thumb."

The extent of the German rubber industry cannot be better illustrated, perhaps, than by putting before our readers a statement of the net imports of crude rubber, year by year.

| YEARS. | Pounds. | YEARS. | Pounds. |
|---|---|---|---|
| 1889 | 7,322,480 | | |
| 1890 | 6,663,360 | | |
| 1891 | 8,041,880 | | |
| 1892 | 8,249,780 | | |
| 1893 | 8,881,840 | | |
| 1894 | 10,110,540 | | |
| 1895 | 10,909,360 | | |
| 1896 | 14,019,720 | | |
| 1897 | 13,848,780 | | |
| 1898 | 16,855,080 | | |
| 1899 | 18,663,700 | 1904 | 28,243,380 |
| 1900 | 19,033,740 | 1905 | 29,793,280 |
| 1901 | 17,621,780 | 1906 | 24,960,100 |
| 1902 | 19,344,160 | 1907 | 22,977,900 |
| 1903 | 23,076,460 | 1908 | 22,816,420 |

Not only is there a disposition in Germany to supply every demand for rubber goods which may exist in the empire, but the export of German rubber goods has grown constantly from the beginning of the industry in that country. As having a bearing upon this subject, it may be worth while to repeat some extracts from a letter from a correspondent of THE INDIA RUBBER WORLD at Berlin, printed in the issue of May 1, 1900 (page 211):

"The leaders in the rubber industry in Germany manifest a deep interest in whatever development is made by their competitors abroad. When I visited Hanover I found Herr Adolf Prinzhorn, head director of the great Continental company located there, absent in the United States. He had lately entertained the superintendent of one of the most important American rubber factories, and he was now returning the visit. The effect of the tendency of the German manufacturer to adopt whatever seems to him best in the practice of whatever country is evident in the growth of the exotic rubber industry on a scale more rapid within recent years than even in the country of its origin.

"No doubt the rubber trade in Germany has benefited by the fact that such men as Herr Emil Spannagel, director of the United Berlin-Frankfort India-Rubber Co., at Berlin, and Senator Carl Maret, of the United Rubber Factories of Harburg-Vienna, have developed their business career in part in other countries. These two have both spent some years in the United States. At Hamburg is the seat of the Harburg Rubber Comb Co., whose proprietor, Dr. Traun, has grown up in the business which he now controls. This business, as is well known, was originally an outgrowth of the hard rubber manufacture established by the late Conrad Poppenhusen, at College Point, now a part of New York city. Already the eldest son of Dr. Traun has spent a term of years in New York, at Pará, and in the Far East, and the doctor told me that he was looking forward to sending his youngest son—the third—to the United States to study the rubber industry as it exists there.

"It has been interesting to me to listen to those German rubber men talking familiarly of rubber conditions in America. Herr Louis Hoff, of the Harburg-Vienna company, for instance, talked of the rubber goods stores in New York, and of the conditions of the importation of crude rubber in the United States, and the like, in a vein which would be impossible with most American manufacturers in respect to the industry in another country. Herr Hoff, particularly, did not confine his remarks to the rubber trade. He had been reading in the newspapers reports of utterances from high English sources on trade relations with Germany, and he had definite and pronounced views on the attitude of the United States on the admission of foreign imports into Cuba, Porto Rico, and the Philippines. The fact is that these gentlemen regard the whole world as their field, both from which to draw men and ideas in the building up of their factories, and in finding a market for their products."

What is said here about the familiarity of the leaders in the German rubber trade with conditions in America applies equally, or even more so, to other countries. It has to do with the export of rubber goods from Germany to a larger extent than from any other country. The high tariff imposed on imports into the United States has limited German trade in the States, as it has the trade of England and France, but in South American and Far Eastern countries the German exporter has been singularly efficient. The German trade has also extended largely into Great Britain, a free trade country, to an extent which has been felt severely by the industry of that country and hindered its development. Every German rubber concern mentioned in these pages, and many others, have branch houses in London, and some of them in other important British trade centers, and not only branch houses but in some cases manufacturing establishments.

PROF. DR. ING. ADOLF PRINZHORN.

[Retired recently as director of Continental Caoutchouc- und Guttapercha Compagnie.]

The thoroughness of the German as a trader is illustrated in the experience of a lead pencil establishment in the United States which had its origin in Germany, but, once established in New York, grew into an independent concern, requiring for the purpose of making erasers alone a rubber factory which before for years had earned an average of $30,000 a year in dividends. This lead pencil concern, while still having its headquarters in Germany, canvassed hundreds of thousands of American business houses to learn (1) what lead pencils they used; (2) whether they used the German pencil; or (3)

THE LATE CARL OTTO WEBER, PH.D.

if not, why not. This information was made the basis of their present important trade.

The same principle, applied to hard rubber goods, mechanical goods, and particularly surgical goods has led to the preëminence of the Germans in the rubber export trade. The increasing importations of rubber goods into the United States is due largely not only to the activity of German manufacturers in studying intimately the wants of the trade, but particularly to their willingness to supply specialties on small orders. No American manufacturer would book an order for 75 cents worth of garden hose to be made to specification any more than a manufacturer of hair pins would take an order for a two-cent package for goods in his line of a special shape. But the German rubber factory will welcome such an order (1) because it means business in the general line, or (2) because if it be in a new field or in a special line of goods it offers a promise of an ultimate growth of trade. In hard rubber goods, for instance, a special surgical article may be ordered by the staff of a hospital and the German manufacturer fills the order readily. An American manufacturer capable of producing the same article will be indifferent about doing so in the absence of an order for less than thousands, being more interested in filling 20 ton orders for electrical appliances, for instance.

FRANZ CLOUTH.

It is not implied here that other rubber manufacturers than Germans are lacking in enterprise in any way, or that the vulcanite or any other branch of the rubber industry is larger in Germany than elsewhere. In fact, the German rubber footwear manufacturers, for instance, complain all the time of the lack of protection under their fiscal system against the competition from other countries. What has been said here in general, however, is illustrated by the fact that there has not existed in England for some years a factory devoted to hard rubber alone, although presumably the consumption of hard rubber goods in England is comparable with that in any other country of like rank.

Account must be taken in this article of the enterprise of the Germans in the development of a submarine cable industry, at a time when most other countries than England were content to leave the cable field to the latter. The success of the German manufacturers in this line, no doubt, was due in part to the encouragement of the government, which generally is extended to industrial enterprises of merit. The plant of Norddeutsche Seekabelwerke, Aktiengesellschaft, at Nordenham o/Weser, was described at length in THE INDIA RUBBER WORLD January 1, 1908 (page 109). The rubber feature of the cable industry in this country was the outgrowth of the important rubber industry at Cologne, founded by Franz Clouth, who, by the way, is distinguished from most manufacturers in this line by his success as an author. His "Gummi, Guttapercha, und Balata" long has been a standard work.

The importance must not be overlooked of the German faculty of association in trade, which is notably represented by the society of rubber manufacturers known technically as Centralverein Deutscher Kautschukwaren-Fabriken, of which the president today is Herr Louis Hoff, director of Vereinigte Gummiwaren-Fabriken Harburg-Wien, vormals Menier—J. N. Reithoffer Actiengesellschaft (Harburg a/d Elbe). This is in no sense a "rubber trust," nor does it lessen in any way the independence of the various leading companies which comprise its membership. Nor does the society undertake to regulate prices of rubber goods, or in any way dictate or control the affairs of its members. At the same time, its influence has been most helpful to the rubber industry in the matter of making its leaders better acquainted socially, in dealing with the government in the matter of legislation affecting the industry, and in keeping the members better acquainted with such details affecting the industry generally, for instance, as the conditions which now and then lower or raise the price of crude rubber and other important materials. A very notable meeting of this society was held in Berlin on November 5, attended by 54 leading manufacturers, for the discussion of important questions affecting the welfare of the industry.

GUSTAV HEINSOHN.

## COTTON GROWING IN AFRICA.

SHIPMENTS of British grown cotton reach Liverpool every week from all parts of the empire, and this year's crop from new fields opened up by the British Cotton Growing Association, principally in Africa, is estimated at 33,000 bales, worth nearly £500,000. The West African crop is estimated at 13,000 bales of 400 pounds each, as compared with 6,400 bales in 1908. These figures are insignificant compared with the statistics of cotton as a whole, but the work of the association named has proved that cotton can be grown on a commercial basis over large areas in the British possessions, and an appeal is made now to the spinners of Lancashire to foster this new British interest with the investment of capital for the development of planting enterprises already founded by the association. It may be mentioned that the Duke of Marlborough has taken a very active interest in the promotion of the work of this association, the capital of which was subscribed by cotton manufacturers in England.

## THE EARLY USE OF DENTAL RUBBER.

AN early application of vulcanized rubber, second perhaps only to its use in footwear, was developed by the American dentist. In the library of THE INDIA RUBBER WORLD is what may be termed the first rubber journal ever published—*The Vulcanite*, "a quarterly journal devoted to the science of mechanical dentistry," and published by the American Hard Rubber Co., at New York, during 1861-62. In its pages appeared frequently the name of Dr. Jonathan Taft, both as editor of the *Dental Register of the West* and dean of the Ohio College of Dental Surgery, both of Cincinnati, the latter the pioneer dental college in the western country. Dr. Taft was connected with this college for 24 years, and at various times with several other important dental schools. It may be added that he was a prominent member of the New England-Ohio family that gave to the United States the president now in office.

THE "cow tree" of British Guiana and adjacent regions, while yielding latex freely, has not been regarded as having value as a source of rubber. Recently, however, Mr. G. C. Benson, of that colony, has announced the discovery of a process whereby the product of this tree can be converted into a serviceable quality of balata.

# Rubber Culture in the Far East.

*By John C. Willis, M.A., Sc.D.**

THE history of rubber culture in tropical Asia dates from 1875, when the authorities at Kew succeeded in convincing the government of India that there were indications of a shortage in rubber supply, as there had been in regard to cinchona about 15 years earlier, and that it would be wise to get the rubber plants of South America established elsewhere. An expedition was sent, at the expense of the Indian government, to the valley of the Amazon, and succeeded in collecting, among other things, seed of the so-called Pará rubber, *Hevea Brasiliensis*. These were grown at Kew, and in 1876 the young plants resulting were sent to the East in Wardian cases in charge of a special gardener. The bulk of the plants came to Ceylon, it having been decided that India had no botanic garden in a suitable climate, but a few went to Singapore and elsewhere.

A special branch botanic garden was opened in Ceylon, at Henaratgoda, near Colombo, to receive the rubber trees, and about 50 were planted there, the remaining 20 being planted at the chief garden of Peradeniya near Kandy, at an elevation of 1,600 feet above the sea, which has on the whole shown itself to be rather too great a height for rapid growth. About 1881 and 1882 the plants began to flower, and a few seeds (and cuttings) were distributed, at first to other botanic gardens, and then to planters in the island who had expressed willingness to try the new cultivation. It is from these seeds or cuttings that the few old trees on such estates as Culloden in Ceylon have sprung.

Very slow progress was made in this way for the next 16 years, but in 1888 the late Dr. Trimen, director of the Ceylon botanic gardens, began to tap the largest of the trees. V-shaped incisions were cut with a hammer and chisel, and the milk was allowed to trickle down the stem into a channel made around the base by sticking on a strip of mud, and from this channel it ran into cocoanut shells, where it was simply allowed to dry, and formed a lump of blackish rubber. The tree was tapped once a week for about eight weeks, then given a rest, and again tapped after a few months. It was tapped every second year, and in nine years had given 13 pounds 6 ounces of dry rubber, or an average of 1½ pounds a year. Now this tree was 12 years old when the tapping began, and a yield of ½ pound, at the then price of a little over two shillings (50 cents), was not enough to make the cultivation profitable, the more so as this tree was the largest of all, and of a size that most trees only reach in 13-16 years.

In this condition we found the question on taking up the direction of the Ceylon gardens in 1896, and, feeling convinced that there was a future before rubber, we commenced detailed experiments in 1897. Tapping a large number of trees, so as to get an average result, we found that about 100 pounds of dry rubber might be expected from an acre of trees 10 years old. This at two shillings a pound was enough to show a fair profit, and people began to take up the cultivation from that time.

One of the most important results of these experiments was the rediscovery of a fact known to the natives of the Amazon, and which is known in the east as "wound response." At later tappings near to the first the tree yields more milk than at the first bleeding. It is true that this milk is less concentrated so far as the amount of rubber in it is concerned, but it runs so much more freely that more rubber is obtained. This showed clearly the reason of previous unfavorable reports on rubber trees and their yield. Either only one tapping had been made, or the tapping had not been sufficiently frequent to show the wound response. Mr. Parkin, who was in Ceylon in 1898-99, carried out detailed experiments on wound response and fully established the regularity of the phenomenon.

*Director of the Royal Botanic Gardens, Ceylon.

Mr. Parkin also worked out the method of preparing biscuit or sheet is in vogue in the east to the present day. The active constituents of the smoke used in South America having been shown to be acetic acid and creosote, Mr. Parkin showed that the best results were obtained by heating the milk to something over 150 degs. Fahr., and coagulating with the calculated quantity of acetic acid in presence of creosote. Planters generally have considered the heating and the creosoting too much trouble, but the making of biscuit or sheet by the aid of acid is most common. Some people allow coagulation to go on naturally by leaving the milk to stand, but this of course simply means that the acid is formed in it by putrefaction. Recently Mr. Kelway Bamber has shown that the heating of the milk destroys the enzyme which it contains, producing a biscuit of the lightest color and one which does not subsequently darken. Good rubber produced in this way has obtained higher prices, and many estates now heat their milk.

The biscuits obtaining a higher price than the raw rubber dried in cocoanut shells, and the price of rubber rising generally, the industry now began to be rapidly taken up, and there was a great run on the few seeds available in the botanic gardens of Ceylon and of Singapore, where also rubber cultivation was being pushed. Seeds were sold at auction, and in one year realized $10 a thousand. In the course of the following five years, seed began to come in from the trees in private hands, and in annually increasing quantity, until now it is a drug in the market, and proposals are under consideration to crush rubber seeds for the useful oil contained. The price of rubber now began to rise, and it proved that the return could be obtained in less than 10 years, and a greater rate than 100 pounds a year, so that the cultivation proved to be extremely profitable.

The biscuit or sheet form adopted for the eastern rubber, and its clear color and cleanliness, have caused it to meet with great favor, and it has sold at higher prices per pound than the best Amazon rubber. This is often supposed to mark a real superiority, but in reality does not, for it takes ten pounds of the South American rubber to equal eight of cultivated in the actual contents of caoutchouc, and consequently the former is really obtaining the higher price. Why the cultivated rubber should be somewhat lacking in strength and tenacity as compared with the wild is one of the greatest problems of the day.

Experiments were conducted by the writer and Mr. Kelway Bamber, preparing biscuit without drying, compressing the newly coagulated rubber into a solid mass. In this way a block rubber was turned out resembling the South American, with about 10-12 per cent. of water contained in it, and this has been favorably reported on by several manufacturers. Other people think that age of the tree is mainly responsible for the greater strength of South American rubber, but various experiments go against this view.

It was not long before tapping by means of a hammer and chisel was given up in favor of tapping by knives, usually of the type of a plane. Given a certain amount of bark on the tree, it was obviously necessary to make that last as long as possible, and tapping in V's by chisels was very destructive, so that a given place would not be healed up by the time that one wanted to operate on it again. Herringbone or spirally running cuts came in, and the wound response was obtained by shaving off the under side of the old wound. If the sideways-sloping cuts be made about a foot apart, and only one side of the tree be tapped at once, it is found that new bark has fully formed by the time that one returns to the cuts first made.

The early method of producing the rubber in little biscuits

is also being superseded by the use of machinery for turning it out in the form of crepe or in other ways, and the biscuits, sheet or crepe are very often compressed into block rubber, which suffers less from oxidation.

As an indication of how rapidly the new industry is growing, the figures of export from Ceylon may be quoted:

| | | |
|---|---|---|
| 1901 | 66 | cwt. |
| 1902 | 189 | " |
| 1903 | 389 | " |
| 1904 | 676 | " |
| 1905 | 1,401 | " |
| 1906 | 3,705 | " |
| 1907 | 7,093 | " |

To turn now to other countries in the east, the one which has shown itself to be on the whole the most favorable of all is the Federated Malay States, a British protectorate lying north of Singapore. The growth of rubber there has been decidedly better than in Ceylon and at the same time coffee, the only other planting industry of importance, has been lately in a very unprosperous condition. The country, unlike Ceylon or Java, has vast areas of undeveloped forest land, which is of all others the best suited for rubber. Under these favoring circumstances the industry has progressed very rapidly and the Malay States are by far the largest exporting country. Not only so, but capital has been more readily forthcoming for rubber planting enterprises.

Java is handicapped like Ceylon by very large existing industries which take up most of the available land, but on the other hand has a great advantage in unlimited and very cheap labor, while the trees grow very well indeed, and there are not wanting indications that Java will some day be an important producer of rubber.

Sumatra and Borneo are also being taken up as rubber countries, especially the former, and other far eastern islands will probably be employed sooner or later.

To turn to India, experiments with *Hevea* in the north have failed, but a considerable area is now planted with this tree in the southern part of the Madras presidency. Growth is apparently slower than in Ceylon, but there are great advantages in regard to plentiful and cheap labor.

At the time of this writing, it is probable that about 400,000 acres in tropical Asia are planted with *Hevea Brasiliensis*. This means in the course of the next seven or eight years a production of about 40,000 to 50,000 tons of clean rubber, or a good deal more than half of the world's present total production. Add to this the fact that during the present boom rubber companies are being floated almost daily, that tropical America and Africa have a fair amount of rubber planted, that it is improbable that the wild rubber of South America will be driven off the market for a long time to come, and that there are also considerable areas planted in other kinds of rubber, and it is evident that it will not be very many years before rubber is cheap and new uses for it may begin to arise freely.

A word of mention in conclusion in regard to other rubbers. *Castilloa elastica*, so largely planted in Mexico, has been given up in tropical Asia on account of its uncertainty. It is by no means easy to persuade the tree to grow well all the time. It may begin well and then fall off, or *vice versa*. The amount of rubber given by tapping is very variable, and there is no wound response.

*Manihot Glaziovii*, the Ceará rubber, grows like a weed all over the East, but has never given a large enough yield to be much taken up. In quality this rubber, when made into biscuit or sheet, is decidedly superior to the best plantation *Hevea*. Recently Ule has discovered three new rubber-yielding species of *Manihot* in Brazil—*M. heptaphylla, M. dichotoma*, and *M. Pianuhyensis*. These are said to give much larger yields than the old Ceará rubber tree, and already have been largely planted in Ceylon, where *Manihot* is found to do better than *Hevea* at high elevations or in the drier parts of the island.

[EDITORIAL NOTE.—Further details of interest on this subject, by the same writer, will be found in his recently published "Agriculture in the Tropics," reviewed on another page of this journal.]

## THREE TIMES TWENTY YEARS AT WORK.

TO THE EDITOR OF THE INDIA RUBBER WORLD: In your request for a contribution to your twentieth birthday number you refer to this lapse of years as "a little while." It is a little past three score years since I took up telegraphy, the only commercial enterprise at that time depending upon electricity for its success, and itself, commercially, then only five years old.

There was very little call for high insulation at that time. The wires were kept in the air as much as possible, and the leading-in wires were insulated by cotton wound on and saturated with beeswax and shellac. About 1847, Austin G. Day had covered wire with rubber, and Stephen T. Armstrong with gutta-percha, in this country, for subaqueous use. In that year the German government laid 1,380 miles of underground telegraph wires, insulated with gutta-percha and protected by a lead covering. The German cable had but a short life, as its makers, thinking that, like india-rubber, it should be vulcanized, mixed sulphur in the compound, and learned the dear lesson that gutta-percha did not believe in amalgamation.

Rubber submarines were used only experimentally at first. Gutta-percha at that time being cheap and more easily applied, and being free from sulphur, which caused the rubber compound to oxidize the wires, for some time had the preference in deep sea cables, notwithstanding its high cost.

Submarine cables were not at first a success, as no means developed for protecting them from anchors until 1851, when the first cable protected with iron armor, was laid acros the English channel. The first armored cable that I know of in the United States was laid across the Hudson river, just above Cold Spring, New York, in 1853.

The wires of the New York, Albany and Buffalo Co. were run to Troy, and there crossed the river on a bridge, then down on the west side of the river to Albany. The wires south from New York city crossed the river on high masts, from Washington Heights to the Palisades, and, at the Highlands above Peekskill, until the middle "fifties."

Although the telegraph and telephone companies had used gutta-percha and "kerite," and for a few years, "okonite" cables, before the birth of THE INDIA RUBBER WORLD, it was not until about that time that a large demand for rubber in insulation was caused by the rapid development of the electric light and electric power industry.

HENRY A. REED.

[President Bishop Gutta Percha Co.]

New York, December 8, 1909.

## THE BALATA INTEREST.

BALATA belting, to which considerable attention has been given in THE INDIA RUBBER WORLD lately, is now manufactured by Liverpool Rubber Co., Limited, who refer to this line of goods as being suitable for all ordinary modern belt driving except in situations of too high temperature, such as would have the effect of melting the balata. They mention their "Constellation" brand as having a tensile strength, in 4 plies, of over 1,800 pounds per inch of width. Other brands have over 1,300 pounds of tensile strength per inch of width. The tensile strength of the best double leather belting is stated by this firm at 1,300 pounds per inch of width.

* * *

THE INDIA RUBBER WORLD is assured by an important firm that within the present year they will have in operation in the United States the largest factory for balata belting in the world, though they are not at present prepared to make details public.

# Growth of the Rubber Reclaiming Industry.

*By Wilmer Dunbar.*

THE reclaiming of rubber from waste or scrap material has made remarkable progress within the past two decades. There is hardly any other branch of the business in which so large a rate of growth has been shown. The improvement in processes has been marked; the extent of the business has developed wonderfully; and the use of the product has increased more rapidly than the consumption of crude rubber itself. The reclaiming of rubber as a practical proposition originated in America, and here is first developed to important proportions. Naturally the use of reclaimed rubber was first adopted here, while manufacturers in Europe were depending largely upon substitutes. Today the use of reclaimed rubber has become universal in the industry, large plants for the purpose having been installed in Europe, in addition to the product of which an important quantity is exported yearly from the United States. Only recently a Japanese manufacturer has been making inquiries in this country with reference to having a reclaiming plant built.

The reclaiming business can be divided broadly into three groups—the mechanical, the acid and the alkali processes.

First in the order of development, and a process still largely used, is that known as the mechanical, in which the old rubber is first ground to a fine powder, and if fabric is present it is blown or sieved out by the use of compressed air or screens. It is then mixed with a given percentage of oil and devulcanized, after which it can be put on a mill and sheeted or batched out. In this description of the process for reclaiming rubber by mechanical means, probably, belongs the first attempts at reclaiming old rubber scraps, which was by the use of water, the rubber first being finely ground or shredded and then put into pans filled with water and either boiled or put in a devulcanizer. With some grades of old rubber this process was fairly successful, although with the rubber then in use, which was as a rule harder and, therefore, less easily acted upon than would be the case with the present knowledge of compounding, it was not extensively used. The next step was to use the finely ground rubber in the batches while the mass was being mixed on the mill and this is still being done very generally. The next attempt at reclaiming, and this was especially true of old boots and shoes, was to grind the stock to a fine powder, canvas and all, and then mixing with a certain percentage of oil and devulcanizing the entire mass, after which it could be batched or sheeted out on a mill, although by many users no attempt was made to do even this.

Next in order of development is what is known as the acid process. In this the rubber containing canvas is first cracked in fine shreds and is then put in an acid tank, containing a bath consisting of sulphuric acid and water. The stock is boiled in the acid and water long enough to remove the canvas, after which the rubber is washed in clean water to free it from the surplus acid. It is then dried and sometimes ground to a powder and run over a magnet to remove the iron, and by some manufacturers is run through what is known as a "riffler"—a long trough, containing obstructions through which a stream of water is running, which contains the rubber, and the obstructions are supposed to remove the sand and other metallic particles which the magent does not remove. After the rubber is ground and is ready to be used, it is mixed with a given amount of oil and devulcanized, after which it is sheeted or batched out and by some manufacturers run through mill refiner with a knife, and by others through a strainer similar to a tubing machine.

Third and last in the order of development is the alkali process, in which the rubber and attached canvas is subjected to a treatment with caustic soda and water. Some of the apparatus for the alkali process is very elaborate, although manufacturers are beginning to use simpler methods than formerly. After devulcanization, the old rubber is washed to free it from the alkali, and after drying is then sheeted and refined in the same way as described in connection with the acid process.

In describing thus briefly and incompletely the reclaiming industry, in which so many millions of dollars are invested, and by which so many thousand tons of reclaimed rubber are produced, it seems proper to say that were it not for the use of this reclaimed material, many rubber articles in common use would be beyond the reach of people in ordinary circumstances.

Reclaimed rubber is largely used in the boot and shoe trade, in mechanical goods, and for insulated wire. Though not largely used by the druggists' sundries trade and in the manufacture of automobile tires, it is safe to predict that it will be used largely by both in the near future, for experiments have already been made by some large manufacturers along these lines and with a great deal of success.

It is impossible to state with any degree of accuracy the amount of reclaimed rubber used in the United States, as many manufacturers do their own reclaiming, and the way in which the old rubber is collected makes it absolutely impossible to do any more than guess at the amount. There are people in the trade, however, usually well informed, who estimate the amount of reclaimed rubber used as twice the weight of new rubber.

Yet the reclaiming of old rubber is in its infancy, as well as its use in rubber goods, and it is destined to be the most necessary feature of the rubber industry of the world, next to the production of new rubber. The trade is coming every year more and more to recognize its importance. After several attempts at a permanent organization, a Rubber Reclaimers' Club has been formed, which has systematized the business very much, and corrected many abuses, especially in relation to the gathering of old rubber.

## THE SINGAPORE RUBBER WORKS.

THE Nederlandsche Gutta-Percha Maatschapii (Netherlands Gutta-Percha Co.) have published a detailed report concerning the business year 1908, in regard to the company's operations in Singapore. The gutta-percha works, for making gutta-percha from leaves, are located at a distance of 45 minutes (riding distance) from Singapore and measures 60 x 48 meters [=196 x 157 feet]. The management considered it necessary to have the works inspected by one of the members of the board of directors residing in Holland, and the same reports that the machinery is in good condition. Operations in the works were started in July, 1908, but the report states that it would be impossible to operate the plant regularly and continually, the supply of leaves being too irregular. The india-rubber factory, adjoining the gutta-percha works, are also stated to be in a position to produce a sufficient amount of goods for meeting all the demands that could be made upon it at the present time. The company manufacture in their rubber factory tires for jinrikshas, gharries and the like; mats and other automobile accessories and hose. The director reports that the manufacture of these lines of goods is carried on in a satisfactory manner. It was not considered necessary to make any addition to the present stock of molds.

THE index to Mr. Pearson's book, "Crude Rubber and Compounding Ingredients," will be sent free by mail on request.

# The Guayule Rubber Situation.

*By Francis E. Lloyd.**

THE history of the guayule industry attaches to itself something of the dramatic interest associated, in the lay mind, with gold mining. And in effect sudden economic discovery is followed by a rush for possession. A steady and swift rise in values make a few rich, while those with a tardy appreciation of the importance of the discovery fail to have "luck." When it is seen that the field is limited, the fight for occupancy begins. And all this centers about a small woody plant thought, up to a few years ago, to be worthless save for fuel, and what meager comfort the gastronomically insistent goat could find in munching the young shoots.

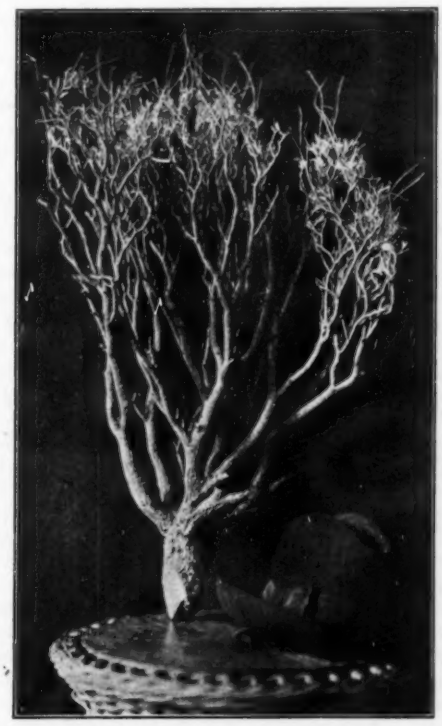
The plant in question was discovered to botanical science, in 1852, by Dr. Bigelow when, attached to the Mexican Boundary Survey, he was collecting in the region of "Escondido creek" in southwestern Texas. The material, which consisted of a single sprig in summer foliage and flower, was later, in 1859, described by the late Professor Asa Gray under the name *Parthenium argentatum*, the specific name referring to the silvery luster due to the closely set, air-containing hairs which cover the surface.

But while the scene of the discovery lies within the United States, to which the guayule industry has quite recently extended, it was on the other side of the Rio Grande that the guayule made its début as an economic force. In Mexico its place in primitive life without doubt antedates recorded history, as playing with a rubber ball, made of "gum" extracted, by mastication, from the guayule, was early indulged in among the indigenes. If these folk used a rubber ball soon after the conquest of Mexico, they probably did so before. It is interesting to know, in this connection, that one of the early attempts to get a sufficient supply of the rubber for examination was made by organizing a chewing "bee," but we are told that an essay to apply the method to the production of the crude rubber on a larger scale was rendered abortive by lockjaw! Furthermore, the name "guayule" has been referred to Aztec origin, and it seems not wholly gratuitous to regard the etymological evidence as of some, though admittedly equivocal, value.

## The Plant Described.

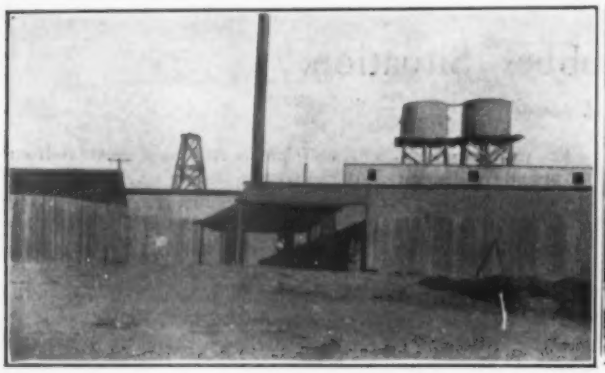
The guayule is a woody shrub of spreading habit. When grown without accident, it makes a much-branched bush. If the branches die away at the base, a distinctly tree-like form is assumed. Large plants may acquire a spread, or a height, of a meter or more, but such individuals are of advanced age, probably not less than 40 to 50 years, and, in consequence on the harvesting of the plant for the manufacture of rubber, they are getting rapidly fewer in number each year. The average plant taking the whole into account, was estimated by Endlich in 1904 to have a weight of about 500 grams, and my own observations indicate the approximate correctness of this. The small leaves are greenish, silvery gray, as also are the younger twigs, where, as the age of the axis advances, give way to light and then to dark, ashy gray. The natives of the guayule regions think to identify different kinds of guayule by the color of the bark, or by the color of the leaves. The distinctions do not bear investigation. The practical collector, however, distinguishes between "macho" and "embra" guayule. The former has fewer and stouter twigs than the latter. None of these distinctions appear, however, to correspond to certain racial, if not specific, differences which I have observed to obtain, but which appear to have little economic bearing.

The winter appearance of the plant is strikingly different from its summer appearance. In winter the leaves, save those forming small clusters at the tips of the twigs, have fallen, leaving these bare. In summer the new growths are clothed with leaves of maximum size, in which the green color is more apparent. At this time also the flowers are borne in loose clusters on slender stems and crown the plant with a profusion of small, pale yellow blossoms. These are arranged in heads, each head resembling a small daisy and capable of forming, at most, five seeds. Usually some of these do not develop. A curious manner of development results in the association with the "seed" of a large amount of chaff, so that, if "seed" is collected, only a very small proportion of the whole is true seed. Only a small percentage of the seed is viable—discouragingly small, in fact, were it not for the generally lavish hand of nature. If, despite the apparently small numbers produced, all the seeds which actually germinate in the field could survive, there would frequently be many more guayule plants than could find room to develop. This has been observed by me to be the case in some regions, while others have shown quite the opposite condition. The inference from this is that no sweeping statement as to the rate at which guayule will reproduce itself from seed in the field may be made. It may be within the ability of a careful observer to state at what rate new plants are taking the place of old, and therefore what the probable stand will be in a given number of years, for a particular and restricted locality. The comment is naturally forthcoming that there has been a good deal of gratuitous guesswork, more or less influenced by personal interest, as to the rate of rehabilitation of a guayule



THE GUAYULE PLANT—USUAL HABIT.
[From THE INDIA RUBBER WORLD, July 1, 1905. Compare cut on a following page.]

*Professor of botany, Alabama Polytechnic Institute; late director department of investigation of Continental-Mexican Rubber Co.



GUAYULE FACTORY OF THE TEXAS RUBBER CO.
[At Marathon, Texas, First in the United States.]

LOADED WAGONS ARRIVING AT FACTORY.
[The Texas Rubber Co., at Marathon.]

field. The more important known facts it will be worth while to indicate.

Natural reproduction in the field takes place in two ways, by seed and by means of shoots (*retoños*) which start up from the shallow lying roots. Space does not permit me here to compare the efficacy of these two methods, but it will suffice to indicate that they are, in effect, complementary. Retoños are relatively few in numbers, but their initial growth is rapid and they quickly produce flowers. Further, their numbers are increased by injury to the top of the plant. The more of the upper part of the plant is removed, the more likely the roots are to produce retoños. Even portions of roots alone frequently do so, and this after dying back quite a distance. The phenomenon is well known, and this it is which has led to the extravagant notion referred to in the preceding paragraph. Nevertheless, it is true, broadly speaking, that on account of the readiness with which retoños are formed, it will be difficult to completely eradicate the guayule, which is different from saying that, in five years, "*ya está otra vez.*"

### HOW THE RUBBER IS CONTAINED.

The internal structure of the plant is of more than academic interest, for the peculiar occurrence of the rubber furnishes the rationale of the success of the mechanical method of extraction. The more obvious details have been known since 1901, when Fron and Francois, French botanists, published a brief account of them. Later Ross (1908), and Lloyd (1908), extended this knowledge. Of interest here is the fact that the rubber, in sharp contrast to the condition found in latex plants, occurs in small, indeed microscopic particles within the cells of the pith, medullary rays and cortex (bark, so-called). Practically, then, each particular particle is completely surrounded by a membrane of cellulose. Obviously, the task of the extractor is to set free the minute masses of rubber and at the same time to bring them into close contact so that larger masses will result, and to completely separate the cellulose (together with wood and cork) from the rubber. Because of the circumstance that the rubber bearing tissues are penetrated longitudinally, from the top of the plant to the bottom by canals which are filled with resin,* this becomes mixed with the rubber during extraction to the extent of 25 per cent., which amount may be lowered by suitable processes.

The general occurrence of rubbers and resins in various plants, particularly in the guayule, has led to the notion that these substances stand in physiological relation to each other, and that as the season advances the resin becomes changed into rubber. I have at hand abundant evidence, however, that this cannot be the case, and contrariwise, that the process of rubber secretion is quite independent of that of resin. This is shown particularly by plants under irrigation, in which the formation of rubber is delayed, but that of resin not.

The effects of irrigation upon the guayule beyond that just mentioned are very marked. These have been studied exhaustively, but here may be mentioned briefly only that the ratio of rubber producing tissue to the remaining, non-producing tissue is lowered in two ways, namely, by the relatively greater development of the wood cylinder and by the reduction of the thickness of the medullary rays. In addition to this, there is to be noted an increased hardness of the wood in which mechanical elements preponderate. The stems of irrigated plants show furthermore a strong tendency to run out into flowering shoots which die back. All this is compensated for, however, by the much more rapid rate of growth which, in irrigated plants averages five to eight times that of field plants. This, in the light of the fact that the deposition of rubber in the tissues of plants grown with extreme rapidity under irrigation, though at first relatively very slow, goes on steadily to a maximum which may be compared favorably with the maximum in field plants, is distinctly encouraging to those who hope to compass the successful cultivation of the plant. I do not ignore certain secondary practical difficulties, such as questions of cost, which constitute the business problem, but the one time greatest doubt as to the responses in the regard of rubber secretion may be retired. The evidence is to appear later, *in extenso*.

### GUAYULE FACTORY PROCESSES.

We may now glance at the process of manufacture of the crude material from the shrub. Public attention was drawn to guayule rubber for the first time by a small exhibit made at the Centennial Exhibition at Philadelphia in 1876, sent from Durango.† It was not until 1888, however, that foreign attention was definitely drawn to the product, at first, it seems, in England, and very shortly after in Germany. In 1900 crude shrub was shipped to Hamburg, and from this small amounts of rubber were recovered and placed on the market. In the following year a laboratory was established by some interested Germans at San Luis Potosi, and the measure of success here had led up to the establishment, in 1902, of a factory at Jimulco. At this time also interested Americans began to conduct experiments at Torrcón. The Jimulco factory placed rubber on the market for the first time in 1905, while the efforts of the Americans culminated in the shipment of crude rubber into the United States in 1904, though in small amounts. For a period between the days when guayule shrub was bought for fuel to be used in smelters at the rate of 8 pounds for one cent gold till 1904

*The value of this resin, as at present understood, is discussed by H. O. Chute, THE INDIA RUBBER WORLD, July 1, 1909—page 351.—F. E. L.

†Following this display a leading rubber manufacturer imported to New York a steamer load of the shrub, with results stated in THE INDIA RUBBER WORLD, April 10, 1909—page 199.—THE EDITOR.

GATHERING GUAYULE IN THE TEXAS FIELDS.

BALING TEXAS GUAYULE WITH A PRESS.

or 1905, the whole industry was in an initial experimental condition, and produced little more than results of prophetic significance.

So far as we may ascertain, this experimentation took two trends, toward a purely mechanical method and toward a chemico-mechanical method, and, if we may depend on reports, in a very few instances, efforts have been made to use a practically purely chemical method, consisting of solution and differential precipitation. As our knowledge does not permit us at the present to believe that this method can produce a rubber which retains its characteristic physical qualities, we need not consider it seriously. On the other hand, the obvious lesson derived from the mastication of the rubber bearing tissues—the first learned by every one who becomes interested in guayule plant—led to the adaptation of machinery to accomplish this same end on a commercial scale. The separation of the fiber, or bagasse, from the rubber, was, however, more difficult, and it was at this point that the aid of chemicals was sought. No very apparent function was, however, at first attributed to that most used, caustic soda, and the earlier patent papers reflect an empirical and uncertain attitude. Avoiding insignificant detail, it will serve the present purpose to indicate the essential features of the process which has produced the generally best results.

The shrub is collected in the field either by pulling it up by the roots, a method causing irreparable injury to the stand, or, much less frequently by cutting at the level of the ground. It is then collected and carried *en burro* to a central camp where it is baled. This point may be on the railway or a good many miles away. In the latter event, it is hauled in wagons to the shipping point, and despatched by freight to the factory. Here it is stacked till needed. Shrinkage between field and factory weights are noted so as to control certain factors of more or less uncertainty. After washing, the shrub is passed through crushers to produce a fairly uniform coarse pulp, which is then put into pebble mills. The interior structure of this machine has been the subject of numerous patents. Steel balls have been used, associated with corrugations or projections of various kinds, but without bettering the standard mill charged with Norwegian flint shore pebbles. The mill—merely a short cylinder—is rotated on its axis until the rubber is agglomerated, when the charge of water, rubber and bagasse is discharged and conveyed to skimming tanks where the water-logged bagasse sinks and the rubber floats and so may be separated. A part of the bagasse does not, however, sink, namely, that derived from the cork proper of the bark and the water-logging of this is accomplished under water either by pressure or by continued soaking. Beater-washers may be employed for perfecting the separation of bagasse.

The rubber as thus prepared contains about 25 per cent. of resin, but this amount may be reduced by boiling in the weak solution of caustic soda, which appears to accomplish this, in part at least, by saponification of the resin acids present. This treatment produces a rubber with 17 to 18 per cent. of resin. The rubber is now in a granular condition. By means of rolls it is further washed and sheeted, when it is ready for packing. It may be merely shipped in sacks, the rubber containing 25 per cent. moisture, or it may be further dried, and pressed into solid blocks of clean rubber, and in this shape, packed in boxes, it presents an attractive appearance. The best results which have been attained, so far as I am aware, by this or essentially similar processes, is an extraction of 15 per cent. of rubber with 25 per cent. of moisture.

### EXTENT AND FUTURE OF THE INDUSTRY.

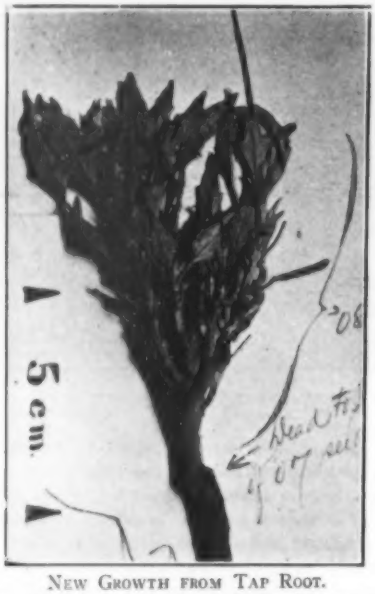
The industry as such is now, let us say, four years old. Within that time, so far as statistics are available* there has been a total exportation of crude rubber from Mexico of 37,932,986 pounds, 80 per cent. of which came to the United States. On a basis of 7 per cent. extraction of crude rubber of 25 per cent. moisture, this would represent 328,292 tons of shrub. On a basis of 15 per cent. extraction we should have 153,111 tons of shrub. Add to these items the amount of shrub exported as such during 2½ years, for which period alone statistics are available, and we have the limits 331,035 and 155,853 tons. If we should assume a 9 per cent. basis of extraction, which would not be far wrong in the average, we should have 191,389 tons of shrub consumed till the present time (September, 1909). It is probable that this estimate is not far wrong, and represents about one-half of the total supply as originally estimated. It now seems that this estimate, made by Endlich, was perhaps not quite liberal enough, but it is unsafe to make any assertions.

Here then, appears to be the situation. An industry a trifle over four years old, represented, according to Mr. Henry C. Pearson† by about $30,000,000 of capital from the United States alone, has, at the present rate of manufacture, a four-years' further natural supply of raw material, roughly speaking. The further concentration of manufacture in a few hands coupled with a steady, controlled output, might be made to result in such regulation that the supply, supplemented by the reduced amount which may be expected to come on in the fields, may last a few years longer. I venture to say, however, that further manufacture without due heed to rigorous forestry methods can end only in the practical extermination, for an extended period, of the natural stand.

What these methods may be cannot be detailed here, beyond to say that of first importance, in view of the reproductive habits of the guayule already described, is the adoption of the cutting method of harvesting to replace the pulling. This will

*Summarized in THE INDIA RUBBER WORLD, September 1, 1909—page 424.—F. E. L.

†THE INDIA RUBBER WORLD, August 1, 1909—page 383.—F. E. L.




NEW GROWTH FROM TAP ROOT.

[The illustration shows a *retoño* or shoot developed in one year from the root of a guayule plant cut off at the ground. The scale of 5 centimeters (at the left) gives an idea of the height of the new growth.]

increase the oncoming shrub very materially, though to the precise extent may only be guessed at in view of unequal conditions. The number of new growths following cutting may, however, amount to 40 per cent. of the original number of plants, and doubtless, under favorable conditions, an even greater percentage may be expected. But, it must be understood also that much lower results may ensue if the conditions are less favorable.

In the light of the probable material reduction of the natural supply of guayule, a result not unexpected for some years, attempts have been made, doubtless by many persons, to see what could be done in the way of cultivating the plant. I have personal acquaintance with one *hacendado* whose repeated trials to germinate the seed resulted only in failure, and this experience is typical of most of these attempts. Success in germination has been reported in the pages of THE INDIA RUBBER WORLD on one occasion, coupled with statements of the content of rubber in the resulting irrigated plants which seem to be not wholly warranted by my own observations.

AN IRRIGATED GUAYULE PLANT.

[Two years' growth. Compare the habit of this plant with the cut on a preceding page.]

I have already spoken of the result of irrigation on the plant. As to the possibility of germination it may be said that the seedlings of guayule are very small and delicate, and for a somewhat lengthy period succumb very easily to unfavorable conditions. They do not, for this period, have any of the resistant qualities usually attributed to desert plants. Moreover, the percentage of germination is very low. With proper conditions of temperature and moisture, however, it is possible to get all the seedlings desired, assuming a sufficient quantity of seed. To obtain this at the present time is expensive, though it will be possible to circumvent this difficulty. Here again the fundamental question is one of costs, and while these doubtless may be reduced, I desire particularly to avoid the implication that more than the experimental aspect of the problem from the scientific point of view has been solved.

The transplanting of both seedlings and of mature stocks is attended by more or less failure, and as this is necessary in order to get cultivated areas started, there is thus introduced another element of difficulty. Experience will enable us to reduce the loss, I think, but here is perhaps the greatest difficulty, to which again the cost problem attaches. The character of the soil too must be thought of. Whether the guayule will do without a distinctly limestone soil is doubtful.

### REPRODUCTION.

The cultivation of guayule in a broad sense will, aside from the question of cost, be carried out in two directions, employing on one hand the methods of forestry, and on the other, those of agriculture. The methods of forestry will be largely restricted to the harvesting and partial modification of the habitat so as to better conditions for the guayule. The value of reseeding or transplanting in original fields is extremely doubtful because of the impossible nature of the soil, as we may call it by courtesy. The natural habitat of the plant is found in the footslopes of the mountain ranges of the *mesa central* of Mexico and its topographical continuation in the Big Bend country of Texas, the hard and rocky soil of which is seldom deep and homogeneous enough to render planting operations of sufficient ease to make them practicable. Agricultural operation, on the other hand, involves the use of both water and workable soil areas, and these at once make demands on the purse strings. Whether the use of catch crops will offset this difficulty remains to be tried.

The problem, therefore, is not an easy one, and is certainly not one for the pessimist. Here, however, is an extremely useful desert plant and one which may be made the source of much wealth even though it be granted that it may not be able to acquire the economic proportions which the cultivation of *Hevea* in the hitherto unconquered regions of the Amazon may attain to when the natural supply demands this expedient. We understand from the writing of Dr. Ross, that the Germans have not been blind to this possibility, and are experimenting with the guayule in desert Africa. It is therefore a matter of gratification that some Americans, on their personal account, have not disregarded it. It is to be expected that at no distant date the results of the work which has been done at their instance will be published.

## NEW USE OF RUBBER IN SURGERY.

IN a new applicance for use in operations on the thorax the head of the patient is placed in a compartment supplied with compressed air, in order to obtain a greater pressure than that of the atmosphere. Means are employed for supplying this air to the lungs, so that respiration does not cease when the cavity of the thorax is opened, as might otherwise happen, with fatal results. The operating chamber is rubber lined, and the apparatus embraces various rubber tubes.

# India-Rubber in the Electrical Field.

*By Ira W. Henry.*

THE story of progress in rubber insulation during the past twenty years is practically the contemporaneous history of electrical achievement.

All forms of electrical energy, whether generated for lighting or power, or the transmission of intelligence, depend upon the insulated conductor to successfully accomplish their purposes. Twenty years ago such brilliantly illuminated streets as are now common, with swiftly moving electric cars, were practically unknown even in the world's greatest cities. The telephone, the office and household necessity of today, scarcely existed then on a commercial scale. All these conveniences and many others that electricity has supplied have been arrived at only by the use of perfectly protected wire.

The increase in the use of india-rubber as a material for insulation purposes during the past twenty years is indicated by the fact that at the beginning of that period there were only five insulated wire companies in America, turning out a product of under $3,000,000 annually, while today there are twenty or more manufacturers in this field, with an output exceeding $25,000,000.

In 1889 the avenues and streets of the great cities were disfigured by pole lines carrying a network of uninsulated wires for telegraph and other purposes. It was a necessity in those days, in order to transmit electric currents safely, to suspend the wires on insulators as far above the street traffic as possible. As the use of high tension currents increased, the danger of coming in contact with these wires was augmented, and in many cases where the wires were dislodged and fell to the street, there were serious results to life and property.

### BURYING THE STREET WIRES.

It was just twenty years ago that active steps were taken by the officials of New York city to remove the unsightly and dangerous pole lines from the streets, and after many public meetings an ordinance was passed requiring the removal of all overhead wires in a certain section within a specified time.

This order was followed by protests from the electrical companies, and at a meeting held in the city hall prominent electrical engineers asserted that it was impossible to furnish current of sufficient voltage to light the streets on insulated wires placed underground.

At the same meeting representatives of two of the wire manufacturing companies signified their readiness to furnish and guarantee rubber insulated cables that could be placed underground and successfully accomplish the desired work. The electric companies having a large investment in overhead conductors, were naturally skeptical, but one company operating in Harlem, placed an order for rubber insulated cables that were laid in One Hundred and Twenty-fifth street, and much to the surprise of the protesting engineers these circuits were a success from the day they were installed.

The city authorities, now feeling assured of the right of their position, ordered all pole lines and wires cut down in a specified section, which for a period left the streets in darkness at night. This drastic action compelled the electric companies to take steps to fulfil their contracts with the city for lighting the streets, and within two years over 600 miles of rubber insulated conductors were in successful operation, in wire subways.

The action of New York was quickly followed by other cities, which of course was greatly to the benefit of the rubber wire manufacturers. Their business increased so rapidly that it was impossible to handle their orders, and capital, quickly seeing a new field for investment, was not slow in starting additional companies. With the increased business and new ideas entering the field, the method of insulating conductors was greatly improved.

### METHODS OF COVERING WIRES.

The first American companies followed the process introduced by Messrs. Siemens Brothers, of England and Germany, for applying rubber to an electric conductor. By this process two strips of rubber were placed longitudinally so as to cover the conducting wire. The whole was then drawn through semicircular grooves which, in firmly pressing the strips around the conductor, caused them to unite at the edges (while the compound was still warm and immediately after the strips had been cut), and thus form a complete cylindrical casing for the conductor. The spare rubber from each strip was at the same time trimmed off at the sides by small circular cutters, close to the rollers. This plan was a great improvement in some respects, as it overcame the objection to unevenness of covering due to an overlapping seam.

When more than one covering was applied, to withstand high voltages, the joining lines of the successive layers were placed at right angles to each other. Difficulty was experienced by some manufacturers in having the seams of the rubber strips unite sufficiently to overcome dampness which might creep into the conductor when the wires were placed underground or submerged. This led to the starting of the second school of insulation known as the seamless method, which was distinctly American, and in opposition to the Siemens process.

The rubber compound by this process was not necessarily calendered or cut into strips, but was taken direct from the compounding mills and fed into a screw machine which forced the rubber in a compact and seamless mass around the conductor as it emerged from a die in the end of the machine. This process proved so satisfactory for high tension work that it induced an American company to enter the field for the production of submarine cables, which up to 1890 had been held almost exclusively by English manufacturers. The first cable of this character to be put in successful operation was laid during the Spanish-American war by the cable ship *Hooker*, of the United States army signal corps, and under the command of Colonel James Allen.

### AMERICAN GOVERNMENT CABLES.

When the American army established its base on the southern coast of Cuba, after the blockade of Cervera's fleet in Santiago, it was found necessary to place Cienfuegos in direct cable communication with the United States. For this purpose a rubber insulated conductor was designed, having a stranded copper core, first insulated with a pure rubber jacket, over which was placed a thicker layer of vulcanized rubber. This conductor was protected in the usual way by a steel armor, and after being successfully laid by the *Hooker*, placed the commander of the army in Cuba in communication with Washington, and it was over this cable that the news of the destruction of the Spanish fleet was sent by Colonel Allen, within five minutes of the time of its occurrence.

Although this cable was of no great length, it proved to the American government that india-rubber could stand more service than gutta-percha, the material that before had been almost universally used. The success of this cable naturally led to more extended business, and with the acquisition of the Philippine islands, india-rubber cables were laid connecting the entire group with headquarters at Manila, and it has been stated that without these cables as a means of communication for giving prompt orders for the disposition of troops, the pacification of the islands

would have been impossible. In all, over 2,000 miles of rubber conductors were used in the cables of the Philippines system and their perfect service under the most trying conditions proved their great advantage for tropical regions, where the excessive heat would in many cases ruin cables insulated with gutta-percha.

Another point that was proved to the advantage of india-rubber was the possibility of shipping the cables overland to San Francisco before they were placed on the cable ship, thus saving ninety days in transportation. If gutta-percha cables had been employed it would have been necessary to have sent them in tanks of water to prevent the softening of the insulation, while rubber which had been vulcanized at a temperature of over 200 degs. Fahr. was of course not affected by any unusual amount of heat.

### RUBBER CABLES IN SNOW AND ICE.

No history of rubber insulation is complete without a note on the important part it has played in the commercial conquest of Alaska. When gold was discovered in the Klondike, electric light and telegraph instruments had never been seen in that region. With the inrush of the miner the American government increased its military force to patrol the country and established stations in the gold region farther and farther back from the seacoast as successful explorations were made. These military posts were of necessity connected by telegraph.

It was found impossible to cut poles in that treeless waste, and the question of transporting them over hundreds of miles of rough country was impossible. To meet this emergency a rubber insulated land cable was designed that could be laid over the snow and ice and by this method keep up communication with the outlying territory. This wire was placed on reels strapped to dog sledges and played out in the most direct line possible. In many places it soon became buried in snow and ice, but was so designed that changes in temperature in no way affected it.

The rapidly increasing commercial importance of Alaska, due not alone to the gold output, but to the immense fisheries and fur interests, demanded still better means of communication. During three months of the year it is impossible for ships to arrive or depart from the icebound Alaska ports. This led to careful investigation and the only solution of the difficulty was a submarine cable connected with home. Very serious consideration was given to the engineering problems involved. The conditions were entirely new, as the shore end would be imbedded for a portion of each year in solid ice, and conditions had to be met with that were entirely new in cable construction.

Tests on india-rubber and gutta-percha were made under conditions as near as could be artificially produced in a laboratory comparing with the Alaska climate. The result proved a marked advantage in favor of rubber, and bids were advertised for by the United States army signal corps, for a deep sea submarine cable approximately 2,000 miles long, connecting Seattle, in the state of Washington, with Alaskan ports.

As a result of these tests the Congress provided for a system of telegraph lines and cables that should connect by an all-American route, putting military stations in Alaska in telegraphic connection with the army headquarters of the department of the Columbia. At that time the chief signal officer of the army said that the undertaking was unique in the annals of telegraphic engineering, when one considered the extent of the territory, its remoteness, the winter inaccessibility of the region, the severity of the climate, the uninhabited and tractless districts, or the adverse physical conditions.

He stated that if this system were completed on a straight line covering a map of the United States it would reach almost across the continent, while the cables used would reach from Newfoundland to Ireland. This plan comprised rubber insulated wires for submarine, land and other cables, all worked as one component system. The entire construction consisted of 3,625 miles of conductors. There are now installed and working cables in Alaska connecting Skagway, Juneau, Sitka, Valdez, and Fort Liscum with Seattle, in the state of Washington.

A recent report from the war department states that although it was a radical departure to use rubber insulated cables, and that the Alaska line had been laid in depths up to 1,700 fathoms, the cable had a greater comparative transmitting speed by 25 per cent. than that of the gutta-percha insulated Atlantic cables.

### INSULATION MACHINERY.

The great increase in the use of rubber for insulating purposes naturally demanded new types of machinery. The design and manufacture of this new apparatus naturally fell to the companies already making machinery for the rubber goods manufacture. When it is known that one insulating company has fifty mills running almost continuously it will be seen that this large amount of rubber compound must have an equal amount of other machinery to apply it to insulating wire.

At first a great many of the machines used for stranding the rubber conductor, taping and braiding the rubber insulation, and armoring the finished cable, were imported from England and Germany. With the growth of the industry in America and the high duty on machinery, the machine manufacturers at home were led to turn out a line of work designed especially to meet American requirements. The last twenty years have seen a tremendous growth in this field, and with the present insulated companies almost continuously increasing their plants and new wire manufacturers coming in the field, a very lucrative business has been established for this purpose.

The rubber insulation manufacturer occupies a very peculiar position in the commercial world. He must not only be an electrical engineer, but a chemist as well. The manufacturer is called on to meet the requirements for all classes of work from the small telephone wire to the high tension underground cable. The vast difference in voltage and conditions under which these materials are used make it necessary to supply various grades and thicknesses of rubber compounds.

### RECLAIMED RUBBER.

While the government specifications call for 40 per cent. of pure Pará rubber combined only with dry mineral matter, the grades of wire used for commercial work under less trying conditions can safely be compounded with a less amount of pure rubber and reclaimed stock. Although many engineering specifications strictly prohibit the use of reclaimed rubber, careful experiments have proven that it is an acquisition rather than a detriment to an insulating compound, if properly used. It will be readily seen that chemically reclaimed rubbers are not suitable for insulating purposes, as the residue left is liable either to attack the metal conductor or the textile fabric with which the insulation is protected on the outside. High grade mechanically reclaimed rubbers which are made from special stock in which oil is not used to sheet them, can be highly recommended for commercial insulating work, as such material makes a firmer compound than one having a large percentage of chalk or other fillers as ingredients, the reclaimed rubber naturally making a compound less porous than with any of the hydroscopic materials.

### HARD RUBBER IN ELECTRICITY.

The use of hard rubber has also played a very important part in the commercial introduction of electricity. In many places for dynamo and motor construction, as well as in high grade instruments, hard rubber has proved to be the only insulator that will withstand the high voltages and prevent leakage. In the last twenty years the output of hard rubber has steadily increased until today the total amount produced is ten times greater than it was in 1889.

While substitutes for rubber insulations have been highly advertised and in many cases put in actual commercial service, nothing has been found that will successfully take the place of Pará rubber for submarine cable work or high tension insulated

lines where there is a possibility of dampness coming in direct contact with the insulation.

Paper, fiber, cambric, and vulcanized oil have all been used where cheapness in first cost is desired, but in all cases where engineers are asked their opinion and where the United States government installs lines for communication or defense, rubber is always specified.

Scientific investigation of the physical and chemical qualities of india-rubber applied as insulating media have been gven very close study during the past few years. As an English writer states, india-rubber is a most curious material to deal with in many ways; it alters its physical properties so enormously under different conditions. When vulcanized its physical properties are almost exactly the reverse of what they are when unvulcanized. In its original state it is elastic; when compounded or mixed it is non-elastic, but when cured or vulcanized it becomes more elastic than ever.

EFFECT OF SULPHUR UPON COPPER.

The vulcanizing process, which of necessity calls for the use of sulphur, naturally has a deleterious effect on the copper conductor. Many plans have been suggested and are in use whereby pure rubber or unvulcanized mixtures are placed next to the conductor, the vulcanized protection being a second layer surrounding the first. Even under these conditions the sulphur has been known to attack the conductor. An English chemist finding that bromine, iodine, and chlorine, instead of oxidizing india-rubber in contact with water, produced an altogether different effect, endeavored to turn this to account in the manufacture of cable core. By his process the conductor was covered with two coatings of india-rubber which were first made to adhere in boiling water and afterwards run through a solution of iodine. The rubber treated in this manner was said to withstand a considerable amount of heat without deteriorating. It also resists the action of air and that of ordinary solvents.

This method of applying insulation containing no sulphur does not attack the copper and has therefore been recommended for special work. The compound is said to retain a permanent elongation like copper when subjected to tension, so that the conductor would keep central when the strain on the core is released. The elastic qualities of india-rubber are also improved by the above treatment.

Owing to the enormous variations in the nature of vulcanized india-rubber as manufactured by various mixings and methods of treatment, it is difficult to give any definite physical, mechanical or electrical data for actual tests, but by specifying certain amounts of thoroughly dried high grade gums, specifications can be drawn of sufficient accuracy to meet the electrical conditions desired.

# Reinforced Concrete in Factory Construction.

*By John O. De Wolf.*

IN the growth and improvements in factory construction since the birth of THE INDIA RUBBER WORLD, twenty years ago, the most radical departures from previous methods, and the ones that are at present attracting the most attention, are those due to the introduction of reinforced concrete into structural work. This is becoming so general in its application and is especially suited to so many purposes that it is now receiving the most careful study of builders and engineers and has awakened great interest among mill owners.

Reinforced concrete is the name generally applied, in the United States, to concrete that has been strengthened by embedding in it steel or iron, either in rods or other forms. It is sometimes called armored concrete, ferro-concrete, and concrete steel; in France it is known as *beton arme*. Ordinary concrete is a combination in proper proportions of cement, sand, and broken stone, gravel or other suitable "aggregate." After it is thoroughly set it forms a mass as hard as stone. This is admirably adapted to resist pressure, but is weak in resistance to tensile strains. By embedding steel at the proper places in the concrete it resists the tensile stresses and the concrete resists the compression. All embedded metal does not constitute reinforcement; a beam surrounded by concrete is simply protected or fireproofed by the concrete, as the beam bears all the stresses. It is not reinforced concrete unless the metal is so placed as to bear those stresses which the concrete cannot resist unaided.

The invention of reinforced concrete is generally attributed to J. Monier, a French gardener, who about 1868 experimented along this line and first successfully applied it to the construction of large flower pots, cisterns, pipes, and the like. From this beginning has grown the present industry, which in many ways is radically changing building construction. Progress was slow at first, but as soon as the Monier system of construction became known others were brought out, differing only in the style of reinforcement and the methods of construction.

The first American patent issued in connection with this new kind of construction was in 1878, to Thaddeus Hyatt. He patented a special form of reinforcing rod with obstructions on it to prevent its slipping when in the concrete. About this time Ernest L. Ransome was working on concrete construction and invented the square twisted reinforcing bar, which he patented in 1884. Since then a variety of "deformed" bars have been placed on the market for concrete reinforcement.

Among the best known and extensively used systems in Europe is that of François Hennebique, brought into use about 1892. This deserves especial note as M. Hennebique was one of the first to use beams of reinforced concrete and to study the theory of their design.

Most of the early formulæ used in construction were purely empirical, but since reinforced concrete has become a common form of construction it is receiving much attention from engineers; experiments are being made on it and a vast amount of information collected on the subject so that its design is no longer a matter of guesswork. The design of a reinforced concrete structure is now a matter of just as exact calculations as with any other structure material and its strength and permanence are in no way in doubt.

The question is sometimes asked as to the permanence of reinforced concrete; how do we know that a form of construction less than fifty years old will withstand the elements and the depreciation of years without weakening and failure? For answer we have only to refer to the permanence of the mortar and concrete made by the Romans and other ancient builders. A study of the use of mortar and concrete in their works leaves no doubt as to the durability of the concrete itself. The test of centuries is not needed to assure us of the behavior of the reinforcing steel, as the metal is thoroughly protected by the concrete against corrosion, and the examination of iron that has been embedded for years shows that no deterioration has taken place.

The first use of reinforced concrete on a large scale in factory construction was at the plant of the Pacific Coast Borax Co., erected by Mr. Ransome in 1898. Afterwards the building passed through a destructive fire and showed conclusively the ability of such a structure to withstand the high temperature that would have destroyed other structures.

A study of the different systems of concrete reinforcement is a most interesting one, but there are now so many that no attempt will be made to go into details of any particular one. In general it may be said that the metal is used in the form of bars,

sheets or specially designed sections. Some systems employ regular commercial iron or steel, some use sections specially made for the purpose, and others have special sections and special methods of placing and using them. The object of all systems of reinforcement is to assist the concrete to resist those stresses that it cannot itself carry. In designing reinforcement the concrete is generally allowed to carry none but compressive stress and the metal is so placed as to resist practically all others.

It is generally understood that a load on a horizontal beam causes a tendency to deflect and that this produces a tension in the lower part of it and compression in the upper portions. The tensile stresses are resisted by metal placed near the bottom surface. If the beam is continuous over a support instead of simply resting upon it there is also tension along the upper part at the support. This necessitates metal to resist it. In addition there is the tendency for the upper and lower parts to slide horizontally on one another as sheets slide when a book or pile of paper is bent. When this sliding, or sheering, tendency exceeds the strength of the concrete to withstand such action it is necessary to provide reinforcement to hold it. For this purpose metal is placed vertically or diagonally in the beam. It may be done by stirrups separate from the main reinforcing bars, by bending up some of the bars near the supports, or by reinforcement made of specially designed sections of metal for this purpose. It will thus be seen that the design of a beam involves not only provision for taking care of the tension in its lower portions, but also the tension and sheering stresses in other parts. In most concrete buildings the beams are an integral part of the whole structure instead of simply resting on supports, and the stresses are more complicated than in ordinary timber construction.

An important feature in a reinforced concrete building is its monolithic character. Instead of a collection of parts with more or less fastening together it has its walls, columns, beams, floors, and roof formed into one mass and so tied together by metal reinforcement that the concrete has little to do except resist compressive stresses. The floor reinforcement is carried over the beams and the beams and floor become one mass; there is thus none of the weakening or lack of continuity that occurs in a wooden building where one floor plank ends and the next begins. In the same manner the reinforcement is so designed and placed as to tie the ends of the beams into the columns and outside walls or pilasters. The column reinforcement extends continuously from the column of one story into that of the story above. This monolithic construction gives the greatest possible rigidity and forms a structure that is free from vibration, no matter what kind of machinery is operated in it. A conclusive proof of rigidity has been furnished by the behavior of reinforced concrete buildings during some of the earthquakes of recent years. Such rigidity and freedom from vibration must of necessity decrease the wear of the machinery, thus adding to its life and reducing the cost of repairs.

It is quite evident that a building of reinforced concrete must be fireproof. It commonly has no woodwork in its construction except the window frames and sashes, and these can be of metal if desired. Sprinkler systems are generally installed to protect the contents, though the building itself does not need them.

The question of the installation of piping, shafting, electric wiring, and so on, is one that arises and is frequently considered as a great objection to a concrete building. For sprinkler piping supports it is common to provide cast iron sockets set in the concrete and threaded to receive the pipe hangers. It is easy to mark their location on the wooden forms before the concrete floor slabs are poured. The cost of these sockets and setting them in place is a small item. In the same way sockets can be set for hanger bolts to support shafting, motors, and the like, providing their location is determined before the building is erected. For holding down machinery and for electric wiring it is a simple matter to drill the necessary holes and use expansion bolts, or for small work wooden plugs can be driven into the holes and screws used in them. A pneumatic drill is a rapid and economical means for such drilling.

Larger window area can be obtained in a concrete building than with brick and timber construction and the lightness of the interior much increased on this account. In the case of a concrete rubber factory building designed by the writer the window area is about 65 per cent. of the wall space of each story, while a similar building of brick and timber construction has a window area about 25 per cent. less.

Rapidity of construction is frequently a point of advantage in favor of concrete. There is generally little or no delay in getting cement and steel reinforcement, while a building using heavy timbers or steel beams is liable to have a long wait for material unless ordered a long time before required. Such lumber as is required for centering is readily obtainable and work on it can be started without delay.

Instead of making the outside walls entirely of concrete it is quite common to use brick or tile for the curtain walls between the pilasters. In some cases this reduces the cost and to some the architectural effect is pleasing. If ornamentation or architectural embellishment is desired on a concrete building it can be obtained to any desired extent. The surface of the concrete can be hammered to resemble cut stone, or various surface finishes can be given by acid treatment or washing the surface after removing the forms before the concrete has hardened.

The question of cost is an important one to owners and we are constantly asked how reinforced concrete compares with brick and timber in this respect. No general reply can properly be made, as so much depends upon the conditions pertaining to each case. Generally speaking, the cost of concrete buildings for light floor loads is more than the common mill construction. As the floor loads increase, or if long spans and few posts are desired, the cost is more favorable to concrete, and for warehouses and heavily loaded structures concrete is usually cheaper. But in addition to the question of cost there are many reasons why this comparatively new system of construction merits careful attention from the manufacturer when he is considering the question of new buildings.

## BLOODSHED OVER RUBBER.

THE article headed "'Red Rubber' in Eastern Peru," in THE INDIA RUBBER WORLD, November 1, 1909 (page 44), is recalled by reports of subsequent proceedings in the British parliament. Upon inquiry being made as to whether further reports as to the Peruvian Amazon Co. had been received, Mr. McKinnon Wood, replying for the government, said that only unofficial reports had come to hand. But he was in communication with the Peruvian company on the subject of the alleged cruelties. The British ambassador at Washington had verified the reports of injuries inflicted upon two American citizens in the rubber region, and the payment of compensation on the part of Peru.

### INDIANS KILL A "CAUCHERO."

AT the beginning of September was assassinated in Rio das Pedras, a tributary of the Madre de Dios, in southern Peru, a well known *cauchero*, Carlos Scharff. The act was that of some of his workmen, who charged him with barbarous treatment. The Indians of that region, which is hundreds of miles south of the Putumayo, the scene of the outrages described by the British press, are of the less tractable tribes Piros and Anahuacas.

According to the Manàos newspaper *Amazonas*, Scharff had lately collected about 500 tons of caucho. A Spaniard named Rodrigues, resident in Ucayali and an *aviador* of Scharff, had organized an expedition to Rio Tacuahamano to try and save this rubber. Creditors of Scharff down the Amazon were also sending representatives to Peru to protect their interests. He is reported to have owed in Pará, Manàos and Iquitos $3,000,000.

# The India-Rubber Trade in Great Britain.

*By Our Regular Correspondent.*

THE departmental committee to inquire into the employment of electricity in coal mines has now been appointed, and its findings will not be without interest to cable makers. The main reason for its appointment, I may say, is a strong opinion in some quarters that the West Stanley colliery explosion in the Durham field last spring was due to an electric spark formed by a short circuit at the working face. During the last two or three years the use of electricity instead of compressed air has largely increased in working coal cutting machinery, especially in the north of England, and many engineers have predicted danger in fiery mines. To some extent, no doubt, the opposition comes from the older engineers, who know little about electricity and are opposed to such innovations. But at the same time there are up-to-date men who recognize the risks introduced by the electrical coal cutter, and who only use electricity instead of compressed air because it is cheaper. If compressed air working can be cheapened—and from what I hear it will be—it is possible that electrical coal cutters will be forbidden. Another alternative is to render the occurrence of short circuiting practically impossible by improvements in the cables. In this connection I hear that Messrs. W. T. Glover & Co., Limited, of Trafford Park, have had the matter under careful consideration, and that they will shortly have some information to make public concerning it. It seemed to be advisable to say what I have done, because otherwise those not familiar with the details of colliery working might imagine that electrical winding or the use of the electric light at the surface had suddenly come under suspicion. At some of the South Wales collieries electrical winding is in use, and found to be cheaper than steam, and there is no doubt that the use of electricity for many operations in mining will continue to increase. Of course rubber insulation has by no means a monopoly; there is the same competition with fibrous and bitumen cables in this as in other fields. Although British cable makers are well to the fore in mining business, with regard to other parts of the electrical installation it is noteworthty that much of the plant has been supplied by Germany.

**ELECTRICITY IN MINES.**

So far I have not seen anything in print regarding the doings of the International Committee and am wondering whether work on the Herculean task has been commenced in earnest. That there is scope for a good deal of careful examination into the reliability of methods is evident to the student of chemical literature. Of late contributions to rubber analysis have consisted chiefly of diatribes observing the unreliability of what has been advanced some time previous as the solution of a difficult problem. To give only one instance of several which I have come across in the last year: In 1903 Weber published the chloral hydrate method of discriminating between the main constituents of the acetone extract from vulcanized rubber, and in 1909 Frank and Marckwald published their conclusions as to the unreliability of the method. The determination of the correct figure for the rubber resins is of course of considerable importance because of the great assistance it gives in arriving at an approximate valuation of the raw rubber used. As, however, in several widely used rubber mixings of today the acetone extract contains organic matter other than the rubber resins, great care is necessitated in drawing conclusions from the bulk of this extract until it has been closely examined. It is this inclusion of more or less new bodies in rubber mixings which is so apt to invalidate what it may be sought to establish as standard methods of analysis. For the determination of certain constituents such as free or total sulphur or the various mineral compounds, this difficulty need not arise, and methods as precise as those recently published for American agricultural chemists might be strongly recommended if not enforced. Rubber analysis, however, is different from agricultural or mineral analysis in that it is not in regular operation between buyer and seller for the determination of particular ingredients. When the buyer of rubber goods has them analyzed—which is by no means a frequent occurrence—he wants to know the whole composition. Moreover, he wants the result as soon as possible and he wants it done cheaply. Ia may easily happen that some constituent may be present which will largely invalidate any standard method, and where time and price are important matters I imagine that rubber will continue to be estimated by difference rather than by the tedious though scientifically beautiful direct methods which have been evolved in recent years from Teutonic laboratories.

**RUBBER ANALYSIS.**

A FEW months ago I referred at some length to the remaking of vulcanized rubber under Gare's patent. The recent patent of Hutchinson and Milne, of October, 1909, for a process of reclaiming vulcanized rubber is on much the same lines and was, I believe, opposed by Gare. The main difference in the specification, as far as I can judge, is that the ground-up waste in Gare's patent is directly treated under heat, and pressure not particularly specified, and in Hutchinson's patent the ground-up rubber is first treated for the removal of the free sulphur and is then subjected to pressure and heat exactly specified; also in this process filling material may be added as well as coloring matter. A good deal is made of the possibility in this process of utilizing coloring matters to a much better effect on account of the low temperature of the operation and the absence of free sulphur. There are one or two sentences in the new specification which I am not prepared to accept straight off. Thus I read that even perished rubber can be rejuvenated so as to be of as good or even a better quality than it was originally. I don't think Gare ever claimed to do as much as this; in his works he has used goods such as solid cab tires which, if decayed at all, are only so to a slight extent on the surface, and if surface cracking was strongly in evidence the outside of the tire was cut off before being remade. I am not at all disposed to believe any statement to the effect that rubber which is really perished can be rejuvenated so as to possess its former properties. Of course if the term perished applies only to what is surface cracked, Hutchinson's statement has nothing very remarkable about it. In a general way these two patents remind me of the rival oil-flotation processes in ore dressing in which the final decision has just been given in the House of Lords. Without going into any details on a matter quite outside the province of these notes I may say that the first patentee has lost his case mainly because he made wide claims as to the quantities and methods of treatment, while the supposed infringer, who has won the day, gave precise detail of his process in his specification. There is no doubt that this remade rubber business is of considerable commercial importance and the patents in connection therewith are far more worth discussion than is the case with the great bulk of rubber patents. In the Hutchinson patent it is quite a relief not to read anything about "allied gums," which mysterious bodies usually figure in a rubber patent, the patent agent evidently having the impression that their inclusion is an element of strength.

**REMADE RUBBER.**

**BANANA RUBBER.**

SOME correspondence in the *India-Rubber Journal* has vested this topic with rather more importance than I had been inclined previously to credit it with, though the able botanist who presides over the destinies of the journal is not inclined to be so optimistic as his correspondent. Some years ago the subject of banana rubber came prominently before me in connection with a secret process of getting rich quickly, but though I knew nothing really against banana rubber at the time, I was quite certain that the samples of rubber shown as having come from that source had quite a different and unmistakable origin. There was little doubt that trickery was at work in the case, and the statement made by the inventor of the process to the effect that rubber cannot be accurately analyzed did not cause me to change the opinion I had formed. Of course the present suggestion of banana rubber is not new, as Otto Zurcher of Jamaica took out a British patent for *Musa*, or banana rubber, a good many years ago. A friend of mine prominently connected with the company shipping the fruit from Costa Rica to England, was very incredulous about the plants yielding rubber, though attempts had been made, he said, to utilize the fibers in the paper manufacture. As the plants are felled after every harvest, there is of course plenty of raw material available for the recovery of by-products. With regard to the question generally, it is of course well known that numbers of plants yield latex which contains rubber in small quantity, and Mr. Pearson suggested in the first edition of his book that several shrubs in Mexico were well worthy of examination as a source of rubber. No doubt the guayule plant was in his mind, and since then we have seen the large guayule rubber business established. In cases of this sort, where the yield is not great and the quality inferior, it is all a matter of the market prices for raw rubber as to whether the business is likely to prove a success. The present time, therefore, is opportune to bring such projects before the capitalist—a fact which the so-called synthetic rubber people have not failed to take advantage of. Of course when the inevitable fall in rubber prices comes to pass it is more than probable that new sources of supply which might be made to yield a profit at present would prove unremunerative as investments; hence people with knowledge of the trade will not be in a hurry to invest money in banana rubber schemes any more than is the case at present with rubber from peat.

**MISCELLANY.**

IN the closing months of the year fires occurred at the cable works of Messrs. Johnson & Phillips, the well-known firm on the Thames, and at the cable works of Messrs. Conolly Brothers, at Blackley, near Manchester, though in neither case was the damage very extensive. Another fire which may be mentioned broke out at the non-flammable celluloid works at Dronfield, North Derbyshire, more damage being done to property across the road than to the works themselves. As a fire in such a factory is apt to cause mistrust as to the value of the process worked it has been pointed out by the authorities that the conflagration was limited to material which had not been treated. I have not seen any of this non-flammable celluloid, but I am sure that there ought to be a good market for such a material.

In the matter of the new lease of life of the Scottish Vulcanite Co., referred to already in THE INDIA RUBBER WORLD, a company having been formed by Mr. Black, late of the North of Scotland Rubber Co., it is satisfactory to hear that many of the old staff will be taken on again.

Mr. Slazenger, the newly-appointed sheriff for the City of London, is a member of the firm which is so widely known in connection with lawn tennis balls. He has also another link with the rubber trade in that he is a brother-in-law of Mr. Alderman Frankenburg, of Salford, Manchester.

British East Africa is now becoming the regular objective of wealthy sportsmen who are following in the wake of men like Lords Hindlip and Delamere, who, in addition to big game hunting have identified themselves with business interests in the way of developing the agricultural resources. On the property of the Hindlip Fawcus Estates, Limited, at Kahawa, Zuchi, Rewera Hills, rubber planting has recently been started, the trees selected being *Manihot Glaziovii* and *M. dichotoma*, the locality being near the coast. The family name of Lord Hindlip is Allsopp, the business with which the first holder of the title was connected not needing any particularization. Mr. W. P. J. Fawcus, who died recently, was for some years prominently connected with the Messrs. W. T. Glover Co., Limited, the cable manufacturers, and his son is now the local representative on the estates.

## "CASTILLOA" YIELDS IN CENTRAL AMERICA.

WHILE considerable interest in rubber has been manifested in Jamaica, and a good deal of planting has been done on that island, the editor of the *Journal* of the Jamaica Agricultural Society points out in the October, 1909, issue that no organized tests for tapping results have been made there, in consequence of which opinion is still divided as to the practicability of rubber culture. They have gone on analogy—their lands bear other tropical products as well as any other part of the world, and why not rubber? This is the basis of such rubber enterprise as now exists.

The *Journal* prints in this connection a very interesting report from William Cradwick, of the colonial department of agriculture, on the tapping of a *Castilloa* rubber tree 14 years old, from seed imported from Costa Rica. Tapped by the Bowman-Northway method, introduced from Ceylon, the scoring on a modification of the herring bone system gave 1 pound of rubber; the spur used four days later gave a further yield of 5 ounces. This tree will be tapped once a month so long as it continues to yield. The tree is 49 inches in girth, three feet from the ground. Other *Castilloa* trees on the same estate are being tapped once a week and once a fortnight, so that observations may be kept as to the effect of tapping this species.

In the same issue of the *Journal* a Costa Rica correspondent discusses the difference between two varieties of native *Castilloa* in that republic, apparently alike to the uninitiated, but readily distinguished by the rubber gatherers. He says that a number of trees taken at random from the first group that he met in a forest, and apparently of the same age, when tapped rather crudely with the *machete* gave results as follows; one class yielded an average of 53 ounces of dry rubber and the other only 9.4 ounces. One tree of the better sort gave 76 ounces, and one of the other only 3 ounces. The age of the trees which he tapped is not even estimated, but they all bore signs of having been tapped before. The point of the correspondent's letter is that planters of *Castilloa* should be careful to secure the species or variety which is most productive.

The Mr. Cradwick already mentioned wrote in a recent report: "I am much more favorably impressed with *Castilloa* than I was, as in spite of a tree being attacked here and there by scale insects and a kind of dieback caused by a fungus growth, the majority of the trees grow rapidly and are free from troubles. They break off in hurricanes rather than blow out of the ground, and the breaking off apparently does not do them the slightest harm; in fact, I think it would be very advisable to top the trees at about 10 or 12 feet from the ground, as in this case the base of the stem would be thickened and strengthened, and high winds would then simply have the effect of breaking off the top growths without injuring the main stem of the tree at all."

"TIRES and All About Them," for everybody who has to do with rubber tires, for business or pleasure.

JOHN BOYD DUNLOP.

## DR. DUNLOP AND THE "TIRE MAJORITY" DINNER.

WHILE the dinner in commemoration of the "majority"—or coming of age—of the pneumatic tire, reported in THE INDIA RUBBER WORLD last month (page 69) had for the guest of honor Mr. Harvey du Cros, managing director of the Dunlop Pneumatic Tyre Co., Limited, who was presented then with a beautiful gold souvenir and a congratulatory address with 850 signatures, there was much interest in the attendance at the dinner of Mr. John Boyd Dunlop, the inventor of the tire which was the basis of the Dunlop company.

Mr. du Cros, in acknowledging the honor paid to him, was very happy in his references to Mr. Dunlop. He said that he would not accept without qualification the credit given to him as the founder of the tire industry. No particular man founded that industry. It was founded by a group of men who were all present—Mr. John B. Dunlop, Mr. R. J. Mecredy, Mr. Richard Booth, and Mr. Fred Woods. They had two foreign godfathers, Monsieur Clermont, of France, than whom there was no more loyal colleague, and Herr Kleyer, who had founded the industry in Germany.

It was, however, Mr. Dunlop's brains that produced the invention, and no one appreciated this fact more than he (Mr. du Cros) did. Mr. Dunlop performed what had been declared impossible. He produced a tire in which was solved the problem of putting air into harness. The principle on which he constructed the tire had not been improved on since. It was but bare justice to state that the industry was founded on the tire produced by Mr. Dunlop. There was no manner of doubt as to his ignorance of the existing Thomson patent. The speaker remembered the fatal day in 1890 when that ancient patent was laid before the Dunlop board. But if it had been known of prior to the formation of the company, the company would never have been founded.

THE PRESENTATION TROPHY.
[Testimonial to Mr. du Cros, at the "Tire Majority" Dinner.]

Thomson apparently had the patent and no business; Dunlop had the business but no patent. Mr. Dunlop had helped them most materially in their efforts to find out something which would get them over their difficulty, and no one gave sounder advice than he did.

At the pneumatic tire dinner the leading toast was proposed by Mr. A. J. Walter, K.C., who spoke at length on the development of the bicycle, in connection with which the pneumatic tire first came into practical use. He said that in 1889 the number of bicycles in the United Kingdom was approximately 300,000, which, by the way, is a much larger figure than can be claimed for the United States in the same year, and rather notable in view of the fact that only cushion and solid tires had been applied to bicycles before that year. Mr. Walter said that the number of bicycles in that country now was about 3,000,000, and the yearly output something like 800,000. The export of bicycles in six months had amounted to £840,822 [= $4,091,860.26]. It is evident, therefore, that the British bicycle industry contributes in no small degree to the demand for pneumatic tires. Mr. Walter said further that over 2,000,000 people paid a cycle tax in France. The number of motor vehicles in Great Britain at present is 100,000, and the yearly output 20,000.

It is announced that the French government has decided to confer on Mr. du Cros the order of the Legion d'Honneur. The King of Spain will confer upon him the order of Isabella la Catholica.

## THEN AND NOW IN CEMENT MAKING.

IN the beginnings of the rubber cement manufacture, as carried on in Massachusetts, it was customary to cut up the crude rubber with butcher knives, after which the slices were cut into smaller pieces with tinsmith's shears. The shredded rubber was then put into a barrel, and naphtha was applied. The mixture was occasionally stirred with a piece of old board or an old oar for a paddle. It took a month to make rubber cement by this method.

Nowadays the crude rubber is speedily cut up by steam-driven rotary knives, and in the churn with which it is thrown with naphtha the stirring is done by paddles operated by steam power. By the modern method, with improved appliances, rubber cement can be made in a day.

## RUBBER IN A LOOM PICKER CHECK.

A LOOM picker check invented in Lancashire involves a new use for india-rubber. A "picker" in weaving is the part of the picker staff which strikes the shuttle; it is covered with a material not so hard as to injure the shuttle, and yet durable, such as rawhide. Leather is expensive and requires frequent renewal, besides which a more elastic material is desirable. In the Lancashire invention cotton sheeting is treated with rubber solution and passed between heavy rollers, the operation being repeated several times with added rubber solution until the fabric has the desired quality. The fabric is then wrapped around a mandrel into a tube, vulcanized, and cut into suitable lengths.

# Twentieth Anniversary Congratulations.

WORDS are lacking with which to express adequately THE INDIA RUBBER WORLD's appreciation of the great number of kindly letters which have reached the management from rubber men everywhere, in connection with the Twentieth Anniversary. While in the nature of things the maintenance of a trade journal calls for other forms of appreciation than kind words, the Editor of THE INDIA RUBBER WORLD can say sincerely that the letters here quoted as representative of a mass of congratulatory correspondence are accepted as a better indication than any mere financial returns that his work in his chosen field has not been without success.

We thank our friends, and hope to merit equal kindness from them twenty years hence.

**"OF GREAT INTEREST AND VALUE."**

[From CHARLES MACINTOSH & Co., LIMITED, india-rubber manufacturers, Manchester, England.]

WE are much pleased to hear that your widely-known journal is to celebrate its twentieth birthday. We wish it a long and prosperous life. We say this in no perfunctory manner. We feel that your paper has been of great interest and value to rubber manufacturers, and to rubber producers in the past few years. We hope that it will continue to keep abreast of the great developments which are apparently coming in the near future.

[Signed] R. K. BIRLEY,
Director.

**CONDUCTED ON "RIGHT PRINCIPLES."**

[From THE B. F. GOODRICH CO., india-rubber manufacturers, Akron, Ohio.]

I WAS not aware until just now that twenty years had rolled around since the first number of your excellent magazine, THE INDIA RUBBER WORLD, made its first bow to the public. Twenty years is indeed a long time, and many changes have since taken place in the rubber world. The fact that it has survived this long shows that its publication has been in good hands, and that the right principles were laid down and followed in its wonderful growth and success. I beg to extend THE INDIA RUBBER WORLD my very best wishes for a prosperous future.

[Signed] G. T. PERKINS.
[Director and long time president.]

**"INFORMATION OF SPECIAL VALUE."**

[From HARBURG AND VIENNA INDIA RUBBER WORKS, Harburg-on-Elbe, Germany.]

WE are pleased to hear that the January number of THE INDIA RUBBER WORLD will celebrate the fact that the paper is twenty years old. We congratulate you, and hope that the paper continues its prosperous career. We always read THE INDIA RUBBER WORLD with great interest and consider that the information contained in it is of special value, not only to us but to all persons interested in the india-rubber trade as well.

[Signed] L. HOFF,
[Director.]

**"INVARIABLY OF INTEREST."**

[From NORTH BRITISH RUBBER CO., LIMITED, Edinburgh, Scotland.]

WE notice that with the January number THE INDIA RUBBER WORLD celebrates its twentieth birthday, and we take this opportunity of congratulating you on this fact. In our opinion, there is no doubt but that THE INDIA RUBBER WORLD holds one of the foremost positions amongst publications of its kind. It is always up to date, brightly written, and contains valuable information and statistics which are invariably of interest to us, and we should judge to all those connected with the rubber industry.

[Signed] A. C. BAKER.
General Manager.

**APPRECIATED IN THE INSULATED WIRE TRADE.**

[From BISHOP GUTTA-PERCHA CO., insulated wire manufacturers, New York.]

IF your publication has been as valuable to, and appreciated as much by, the clothing, mechanical and other rubber industries, as it has been in the insulated wire business, surely you may feel that your birth was not premature, but that, like other great enterprises and great men, was just in time to fill a great want, and we feel that it has been well filled.

[Signed] HENRY A. REED,
[President.]

**"INSTRUCTIVE AND PROFITABLE READING."**

[From JAMES C. HARVEY, india-rubber planter, Sanborn, Estado do Vera Cruz, Mexico.]

YOUR journal has been on my subscription list for the last ten years. I recall no number during that period that has failed to provide instructive and profitable reading, not alone as affecting the trade status of manufactured rubber goods and the market in the crude product, but as pertaining to planting affairs in general and with respect to all the commercial rubber producing plants, and it affords me a very great deal of satisfaction to say so. [Signed] J. C. HARVEY.

**"MUCH VALUABLE INFORMATION."**

[From Professor Dr. ADOLF PRINZHORN, former rubber manufacturer, Hanover, Germany.]

ALLOW me to congratulate you most cordially at the completion of the twentieth year of THE INDIA RUBBER WORLD. There are few journals from which I have got so much valuable information as from this paper, which from the beginning has been under your able management. [Signed] A. PRINZHORN.

**"EACH ISSUE A LITTLE MORE INTERESTING."**

[From GEORGE H. HOOD, a pioneer rubber manufacturer, Boston.]

IT gives me pleasure to recall that I was one of the subscribers to the first issue of your valuable paper, and that I have continued to receive it from that time to the present. I have always found it not only interesting, but helpful to me in keeping in touch with rubber matters in general. Each issue has always seemed to me a little more interesting and progressive than its predecessor, and it has always seemed to keep pace with the tremendous growth of the rubber industry. With congratulations to you for the good work you have already accomplished, and with best wishes for the continued growth and prosperity of THE INDIA RUBBER WORLD, etc.

[Signed] GEORGE H. HOOD.

**"SCOPE AND USEFULNESS GROWING."**

[From GEORGE A. ALDEN & Co., india-rubber importers, Boston.]

I was reminded the other day that THE INDIA RUBBER WORLD has been in existence twenty years. How time flies! It was an exhibition of very considerable nerve on your part to devote time and capital to the interests of a trade so relatively inconsequential in those days. But your forecast was sagacious and right, for the growth of the rubber trade has been phenomenal within that period, and a good trade paper has been a very necessary part of it. In all that score of years, I think, I have read more or less of every issue, and have on special occasions expressed myself in appreciation of its attractive make-up and of the great interest and instructiveness of its contents. I have observed its scope and usefulness grow greater year by year until THE INDIA RUBBER WORLD has become an undoubted power in the trade, looked to for information and looked up to for advice and opinions. [Signed] GEORGE WATKINSON.

**KEPT THEM WELL POSTED.**

[From NORTHWESTERN RUBBER CO., LIMITED, reclaimed rubber, Litherland, Liverpool, England.]

IF I am not mistaken 1910 will celebrate the Twentieth Anniversary of THE INDIA RUBBER WORLD, and as I have been connected with the rubber business about the same time, I wish to extend to you my congratulations on the success which your paper has attained. I remember it in the early days and from its inception it was always a source of great satisfaction to me, and it kept me well posted in the affairs of the rubber world and

given me a great deal of useful information which enabled me to get into close touch with interests necessary to the successful conduct of my business. As an advertising medium it has always paid me and I hope that the paper will go on with the same success in the future as it has in the past.

[Signed] E. E. BUCKLETON.
[Manager.]

**RIDES TWENTY MILES IN THE RAIN FOR IT.**

[From HORTER CULTURE CO., LIMITED, New Orleans, Louisiana, india-rubber planters in Nicaragua.]

I AM anxious to have you know how much I care for your monthly journal; it is not only full of interest for me but I always find something in it that profits me in its application to what I am doing on my plantations. If in the mail I don't see the blue cover promptly, I don't mind a ride of twenty miles or so to get it, and riding for twenty miles in Nicaragua usually means a soaking. [Signed] J. C. HORTER,
[Vice-President and Manager.]

**"HIGHLY APPRECIATED IN HOLLAND."**

[From Dr. A. G. N. SWART, 's Gravenhage, Holland, member of the committee of rubber growing companies in the Netherlands East Indies.]

YOUR paper being of the greatest interest, not only to Americans, but, I may say, to every one interested in rubber, I congratulate you most heartily on its twenty years of existence. I hope that its present Editor will continue in that capacity for ever so long, as his knowledge and ability in all matters concerning rubber is highly appreciated by all his good friends in Holland. [Signed] A. G. N. SWART.

**"PICKED UP TRADE THROUGH IT."**

[From TYER RUBBER CO., manufacturers, Andover, Massachusetts.]

I READ THE INDIA RUBBER WORLD every issue, and there is always something instructive and interesting in it, and we should miss it very much. We have picked up trade through it, having one customer in particular in another country that read our "ad." and through that we sell large lots of our goods.

[Signed] JOHN H. FLINT.
[Treasurer.]

**"PLEASANT READING."**

[From WEISE & CO., india-rubber merchants, Rotterdam, Holland.]

MY best wishes on the twentieth birthday of THE INDIA RUBBER WORLD. I state with pleasure that your paper has not only always been of interest and value to us for its splendid information but also that I have always appreciated the fact that you understood how to make it a pleasant reading. Technical papers as a rule are so hopelessly tough! [Signed] JAC. MUSLY.

**THE BEST OF THE NEWS CONCERNING RUBBER.**

[From BOTANIC GARDENS, SINGAPORE, Straits Settlements.]

THE INDIA RUBBER WORLD is of interest and value to me; I should be very sorry to be without it. It gives the best of the news of the day concerning the industry which is the sole topic of conversation here, and it gives its information clearly and brightly. I congratulate its Editor on its attaining its first twenty years, and hope it may go on as well for another twenty and more beyond that.

[Signed] HENRY N. RIDLEY,
[Director.]

**"OF GREAT INTEREST FOR MANUFACTURERS."**

[From MICHELIN ET CIE., india-rubber manufacturers, Clermont-Ferrand, France.]

ON the occasion of the twentieth anniversary of THE INDIA RUBBER WORLD'S existence, I have pleasure in saying that I consider the reading of your excellent review of great interest for a rubber manufacturer. I also seize this opportunity to send you my best wishes for its further prosperity.

[Signed] EDOUARD MICHELIN.

**"EACH YEAR MORE USEFUL."**

[From RENÉ BOBET, consulting engineer in india-rubber, Paris, France.]

I HAVE been reading your esteemed journal since it was started —that is to say, for twenty years. It is a great pleasure for me on the occasion of this anniversary to sincerely compliment you on the remarkable manner in which you have made a success of THE INDIA RUBBER WORLD. It is a pleasure for me to notice that your journal has each year become more interesting, more complete, and more useful to all those who are engaged in the caoutchouc industry, by giving information of the very highest value. I hope you will continue to be successful.

[Signed] R. BOBET.

**THE "CLASSICAL" RUBBER PAPER.**

[From VEREINIGTE BERLIN-FRANKFURTER GUMMIWAREN-FABRIKEN, Gross-Lichterfelde, Germany.]

I HAVE followed the development of THE INDIA RUBBER WORLD with great interest, and derived benefit from it many times. I think every modern rubber manufacturer ought to read it, and I think I am not too enthusiastic if I call it "the classical paper for the india-rubber trade." I am convinced that with the great progress and the wide future the rubber industry has before it your periodical is bound to have a brilliant career.

[Signed] EMIL SPANNAGEL.
[Manager.]

**"A BENEFICIAL EFFECT."**

[From PIRELLI & CO., india-rubber manufacturers, Milan, Italy.]

WE notice that THE INDIA RUBBER WORLD will celebrate in January next the fact that the paper is twenty years old. While heartily congratulating you on this event, we gladly avail ourselves of this occasion to express our appreciation of the most beneficial effect that the rubber industry and trade have derived from your paper and your personal collaboration.

[Signed] PIRELLI & CO.

**"HAS GROWN IN USEFULNESS WITH YEARS."**

[From VOORHEES RUBBER MANUFACTURING CO., Jersey City, New Jersey.]

MY attention is called to the fact that you are soon to issue a birthday number of THE INDIA RUBBER WORLD; that it is twenty years since I gave you the first advertisement, and that the blond-bearded young man who received it is now a recognized veteran in the trade. The pioneer rubber trade paper then seemed a necessity to the rubber business, and it has grown in usefulness with the years. I congratulate you on its well-earned past, on its excellent present and on its splendid prospects for future usefulness. [Signed] JOHN J. VOORHEES.
[President.]

**MARCHING ALONG WITH THE TRADE.**

[From APSLEY RUBBER CO., manufacturers, Hudson, Massachusetts.]

A SCORE of years have passed since we as manufacturers of rubber goods gave a hearty welcome to THE INDIA RUBBER WORLD on its first appearance as the representative and exponent of this great industry. The industry itself has made enormous strides since that time, and THE INDIA RUBBER WORLD has marched along with it, and we believe it has contributed much to the advancement of the business it represents by the mass of practical information it has furnished its readers. Regarding the value of THE WORLD as an advertising medium, the most practical endorsement I can give is the enclosed copy for a full page advertisement in your birthday number.

[Signed] L. D. APSLEY,
[President.]

**CONTRIBUTED TO THE BETTERMENT OF THE TRADE.**

[From J. A. MENDES, india-rubber merchant, Pará, Brazil.]

I UNDERSTAND that the January number of THE INDIA RUBBER WORLD is to be a special number, celebrating the fact that the paper is twenty years old. I don't know of any other technical paper (the growth of which having kept pace with that of the rubber and allied industries) that has really contributed so efficiently to the betterment of all concerned, at both ends of production and of the vast and always increasing fields of the india-rubber manufacture. [Signed] J. A. MENDES.

**AN EXCELLENT TITLE.**

[From the GOVERNMENT GUTTA-PERCHA AND RUBBER PLANTATIONS IN NETHERLANDS INDIA, Buitenzorg, Java.]

IT is a great pleasure to me to congratulate you upon the twentieth anniversary of THE INDIA RUBBER WORLD. The fact—

though I live so far away from New York—that I am a regular reader proves how I am attached to your paper. The title of your periodical could not be a better one; it gives one an exact account what is going on in "the india-rubber world."

[Signed] W. R. TROMP DE HAAS,
[Superintendent.]

"OF GREAT INTEREST."

[From JULIUS KOPP, wholesale india-rubber goods, Copenhagen, Denmark.]

I HAVE pleasure in stating that THE INDIA RUBBER WORLD is a paper of great interest to me and has very often given me valuable information. [Signed] JULIUS KOPP.

"THE BEST PAPER IN THE INDUSTRY."

[From the AMERICAN ASSOCIATION OF COMMERCE AND TRADE, Berlin, Germany.]

I CONSIDER THE INDIA RUBBER WORLD the best paper in the rubber industry and unsurpassed in neatness of dress and solidity of contents and richness of news. I trust that the paper may under your able management celebrate many more decades of its existence. [Signed] GEORGE S. ATWOOD.
[Secretary.]

LOOKS FORWARD KEENLY FOR IT.

[From J. L. HERMESSEN, A. M. I. E. E., rubber planting expert, Tapachula, Estado do Chiapas, Mexico.]

I HAVE pleasure in stating that I look forward keenly to every issue of THE INDIA RUBBER WORLD, finding the information which it gives from all parts of the world, and upon all phases of the industry represented, as interesting as it is valuable. With so much going on all the time in every direction, I do not know how any one connected with rubber—whether as planter, merchant or manufacturer—can keep *au courant* without reading THE INDIA RUBBER WORLD. Speaking for myself, I know I can't. Which is why I subscribe for it. [Signed] J. L. HERMESSEN.

"ALMOST INDISPENSABLE."

[From G. VAN DEN KERCKHOVE, consulting india-rubber expert, Brussels, Belgium.]

UPON the occasion of the twentieth anniversary of THE INDIA RUBBER WORLD, I want to offer my most sincere congratulations. THE INDIA RUBBER WORLD is not only a useful organ but, I might add, has come to be almost indispensable, both to the manufacturer and the rubber planter. During the fifteen years that I have been a regular reader, and sometimes a modest collaborator, I have derived most valuable information from its columns.

[Signed] G. V. D. KERCKHOVE.

## AMERICAN RUBBER GOODS EXPORTS.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta-percha from the United States for the month of October, 1909, and for the first ten months of five calendar years:

| MONTHS. | Belting Packing, and Hose. | Boots and Shoes. | All Other Rubber. | TOTAL. |
|---|---|---|---|---|
| October, 1909 ..... | $167,775 | $160,899 | $419,292 | $747,966 |
| January to September | 1,301,497 | 1,127,806 | 3,059,146 | 5,488,449 |
| Total ..... | $1,469,272 | $1,288,705 | $3,478,438 | $6,236,415 |
| Total, 1908..... | 1,049,641 | 1,157,136 | 2,940,309 | 5,147,086 |
| Total, 1907..... | 1,168,648 | 1,401,980 | 3,345,209 | 5,915,747 |
| Total, 1906..... | 994,883 | 1,077,009 | 2,702,861 | 4,774,753 |
| Total, 1905..... | 958,660 | 1,056,458 | 2,373,841 | 4,388,959 |

RED RUBBER STAMPS.—A maker of rubber stamps in St. Louis recalls that in the early days of the industry there was a great preference for red rubber stamps, and it was hard to convince anybody that stamps other than red were of any account.

NEW TIRE PROTECTOR.—An invention by E. P. Curry, of Hoguiam, Washington, is thus described: It is a tire protector, consisting of a thin band of steel which is fitted on the tire before it is inflated. Inflation causes the steel band to cling to the tire, thus saving it from wear.

## JOHN MURPHY, A PIONEER.

THE reorganization of the Scottish Vulcanite Co., Limited (Edinburgh, Scotland), of which an account was given in this paper last month (page 75), recalls the connection with its beginnings of John Murphy, one of the oldest men in America now connected or who has been connected with the rubber industry. Mr. Murphy was born April 4, 1824, and at the age of 21 began work in rubber in the factory at Harlem, New York, of the three Rider brothers, who in 1845 formed a copartnership to manufacture under the patents of Charles Goodyear.

There were various changes within a few years in the then new rubber industry, and some time after the Rider and certain other licenses were acquired by the Union India Rubber Co., in 1848, the Riders became independent and incorporated the North American Gutta-Percha Comb Co., with a factory in East Thirty-third street, New York, and under patents and processes of John Murphy they began the manufacture of hard and soft goods of gutta-percha, and especially gutta-percha combs. The new company were proceeded against by the owners of the Goodyear patents, which latter were finally successful.

JOHN MURPHY.

William Judson, who had been one of Goodyear's advisers, and who had an interest in several American rubber factories, had already become one of the founders of the North British Rubber Co., at Edinburgh. It was at his suggestion that the Scottish Vulcanite factory was begun, about 1861. The first machinery used by the company was of American manufacture, and the first skilled employés graduated from American factories. The installation of the Edinburgh plant and its beginning of operation were in charge of Mr. Murphy, who remained in Scotland for two years.

Later Mr. Murphy was one of the incorporators of the old Manhattan Rubber Co., which for several years operated the old H. H. Day factory at New Brunswick, New Jersey. After a few years he sold out his interest and, in 1868, became factory superintendent of the Gutta Percha and Rubber Manufacturing Co. (New York), a position which he filled ably for more than 30 years, benefiting the business both by his skill as a manufacturer and his ingenuity as an inventor, and well earning the rest which he has since enjoyed so philosophically.

THE Western Electric Co. announce a contract with the Chinese government to equip a modern telephone plant in the city of Pekin, at a cost of $150,000.

# Aëronautics at a Rubber Banquet.

THE evening chosen for the Aëronautic Symposium of the Rubber Club of America, in Boston, on December 13, was conspicuously dark and aggressively rainy, but all without effect, for there gathered at the new Algonquin Club the largest and the most representative aggregation that the history of the Rubber Club affords. Not only was all New England represented, but New York, the middle West and Canada sent delegates to attend the dinner, and incidentally all acknowledged that it was worth the journey. The Rubber Club had possession of one entire floor, which means the spacious banquet hall, two great reception rooms, and the broad foyer fronting the elevator and the stairs. From 6 until 7 o'clock the reception halls were crowded with friendly rubber men and their guests, who, at the end of the hour were marshaled into the banquet hall.

At the speakers' table were seated the President of the club, Mr. Henry C. Pearson; Professor W. H. Pickering, of Harvard University, and President of the New England Aëro Club; A. Lawrence Rotch, professor of meteorology, Harvard University, and director of Blue Hill Observatory; Professor Robert W. Wood, of Johns Hopkins University, Baltimore; and Edgar Beecher Bronson, the well known author and explorer. These, the guests and speakers of the evening, had for table companions Mr. Frederick C. Hood, Vice President of the Club, and the honorary Vice Presidents: Ex-Governor Augustus O. Bourn, John H. Flint, Alexander M. Paul, and Arthur W. Stedman. To right and left and in front of the speakers' table were round tables laid for six each, at which were seated Club members and their guests. The tables were tastfully decorated with flowers and during the dinner a superb orchestra in a near-by alcove rendered those selections that are always appreciated by good diners.

ORVILLE AND WILBUR WRIGHT

The menu was an artistic creation in green and white, the front cover bearing an excellent likeness of the Wright Brothers, while the back cover showed views of the Wright biplane, Baldwin's American war balloon, the Curtiss biplane and the Blériot monoplane. The eight-page folder within consisted of a title page, a list of the speakers and invited guests, the menu, and a list of the active officers of the Club, the whole being a typographical triumph.

The dinner was one of the most delicious that the Algonquin Club has ever served, and brought forth many words of appreciation. Two full hours were consumed before coffee and cigars were reached, but none grudged the time.

Promptly at 9 o'clock President Pearson called the diners to order and, after briefly outlining the subject of the evening and explaining what a definite business interest the rubber trade had in airships of all kinds, whether heavier than air or lighter than air, introduced Professor A. Lawrence Rotch as the first speaker. Professor Rotch, whose book "Conquest of the Air" is receiving such world wide attention, and whose work at Blue Hill Observatory has given him an international reputation, proved to be a most interesting talker. He described, briefly and clearly, means by which with various kinds of kites and balloons carrying recording instruments they were able to learn much about temperature, pressure and currents up to a height of about 12 miles. He pointed out how this information, when tabulated not only from Blue Hill Observatory but from many others, would result eventually in charts that would be of the greatest practical use to aëronauts in forecasting the direction and velocity of winds and air currents and in the avoidance of storms.

Professor W. H. Pickering also proved a very pleasant speaker. He described in detail brief afternoon balloon trips,

**MENU.**

A good digestion to you all: and once more I shower a welcome on ye!
—HENRY VIII.

CANAPES MODERNE.
Give us a foretaste of your quality.
—HAMLET.

OYSTERS.
Even an oyster may be crossed in love.
—SHERIDAN.

CREAM OF FRESH MUSHROOMS.
I came upstairs into the world, for I was born in a cellar.
—CONGREVE.

CROUTE AU POT.
A delicate odor as ever hit my nostril.
—PERICLES.

FILET OF KINGFISH SAUTE MEUNIERE.
Some hours before you took me from the breach of the sea.
—TWELFTH NIGHT.

CUCUMBERS.
Cowcumbers are cold in the third degree.
—SWIFT.

SADDLE OF LAMB COLBERT.
Pray you, whom does the wolf love?
—CORIOLANUS.

NEW STRING BEANS. POMMES CHATEAU.
A most fresh and delicate creation.
—OTHELLO.

SWEETBREADS BRAISE AUX TRUFFLES.
FRENCH PEAS.
Your infant peas to asparagus prefer.
—KING.

ARTICHOKES HOLLANDAISE.
And with forced fingers rude shatter your leaves.
—MILTON.

SORBET.
How well my comfort is revived by this.
—ROMEO AND JULIET.

BLACK DUCK.
And spread the sacred treasures of the breast.
—COWPER.

CELERY MAYONNAISE.
O herbaceous teat,
'Twould tempt the dying anchorite to eat.
—SIDNEY SMITH.

GLACES FANTAISES.
A thousand different shapes it bears
Comely in a thousand shapes appear.
—COWLEY.

FANCY CAKES.
All that's sweet was made
But to be lost when sweetest.
—MOORE

CAMEMBERT.
Bachelor's fare. Bread and cheese and kisses.
—SWIFT.

COFFEE.
Although the last not least.
—KING LEAR.

I witness with him
That he dined not at home.
—COMEDY OF ERRORS.

PROFESSOR W. H. PICKERING.
[President New England Aëro Club.]

AUGUSTUS POST.
[Secretary Aëro Club of America.]

telling exactly how the great airship was made ready, how it was trimmed and balanced and safely gotten away. His description of the landscape, over which they floated, of villages, railroads, rivers, and wooded sections, was so well done and so graphic that one almost felt as if a summer's afternoon balloon journey had been one of their own experiences.

The next speaker was Professor Robert W. Wood, of Johns Hopkins. Although a young man, as a physicist, experimenter, and solver of difficult problems, and a winner of scores of prizes given by scientific societies, Professor Wood is known the world over. To all of the above he adds a remarkable faculty as an after dinner speaker. He acknowledged that his personal touch with the subject of aëroplanes was not of especial note. Some years ago in Germany he had done some experimenting with Lilienthal, and as a purely physical problem had followed the evolution of the monoplane and the biplane to the present time. He likened the heavier-than-air machine to-day to the "dug out" canoe of prehistoric man, when first he discovered he could add a sail to it. He predicted that before many years knowledge in aëroplaning and safety devices would so multiply that the flying machine would be relatively as safe as the present sailboat.

Mr. Edgar Beecher Bronson, who was the next speaker, is one whose name has of late appeared in the leading magazines in connection with exceedingly graphic hunting, ranching, and exploring stories. There is almost no form of adventure in which Mr. Bronson is not past master. Years ago he started by ballon from New York City and landed in the Adirondacks after being in the air for 26 hours, which was the record up to the time of the recent St. Louis races. As a big game hunter his story of "In Closed Territory" and his wonderful collection of trophies now on exhibition in New York make him one of the great American Nimrods. Incidentally Mr. Bronson is a delightful *raconteur*, and as a preliminary to his speech he told a good story and did it exceedingly well, and the audience was so appreciative that they kept him at it until he felt that his time had elapsed and he put a finis to a rarely witty series of anecdotes.

By this time the listeners were ready for the moving pictures which embraced dirigible balloons, leaving and entering their huge sheds, navigating the air, close at hand and far in the distance, giving really a better idea of these huge vessels and how they are manipulated than could be gotten by attending scores of ascensions. The really thrilling series of pictures, however, were those that covered aëroplanes in flight, particularly that which showed the Curtiss machine winning the *Scientific American* prize at Hammondsport. This showed the great machine starting on the roadway in a cloud of dust like an automobile, then suddenly rising in the air, sailing over the fences, then over the trees, and circling the race course again and again like some huge mechanical bird. These mov-

PROFESSOR ROBERT W. WOOD.
[Johns Hopkins University.]

A LAWRENCE ROTCH.
[Professor of Meteorology at Harvard.]

EDGAR BEECHER BRONSON.
[Author and Traveler.]

ing pictures were shown by Mr. Augustus Post, secretary of the Aëro Club of America, and one who has successfully navigated the air in Europe and America for many years past.

After the moving pictures came a series of stereopticon views showing the progress flight in balloons and aëroplanes from the time of Montgolfier brothers up to the present. Mr. Post described all of the types in a few well chosen words and ended by a bit of personal experience describing his marvelous escape from death in Berlin, when his balloon burst and he and his party fell, wrecking the roof of a house, but themselves escaping serious injury. This concluded the evening's entertainment, and the Rubber Club's committees, and particularly those upon whom most of the work devolved—Messrs. Mayo, Appleton, Coe, and Stedman—were very warmly congratulated by all present.

## GOOD CONDITION OF THE TRADE.

A NUMBER of representative men in the india-rubber industry have been asked by THE INDIA RUBBER WORLD for an expression of opinion on the condition of trade, and in regard to prospects. Without exception those who have been interviewed have regarded the situation favorably, as indicated by the quotations which follow.

* * *

JOHN H. COBB, president New York Belting and Packing Co., Limited: "Business is very good and the conditions on all lines throughout the country have improved materially over last year. In some lines, particularly in belting, the improvement is hardly as great as we had reason to anticipate. This is due largely to the fact that many saw mills are not running. Taken as a whole, however, the improvement for all kinds of mechanical rubber goods is very considerable and the prospects for next year are very satisfactory. Profits have been on a smaller percentage basis, owing to the great advance in rubber and in cotton duck. The raw materials used in our business have never been so high, and I do not see any chance for them to be lower very soon. The tremendous demand for rubber, particularly for tires, is likely to continue and keep up the price of rubber, while the shortage of the cotton crop seems likely to keep up the price of duck for another year. Fortunately our duck contracts are made in November and a further advance will not hurt us immediately. Our competitors in the belting trade are in no better condition than the rubber manufacturers. The advance in leather and leather belting has been even greater than in our product, and of course cotton belting has advanced in line with duck. I do not think that the advance in prices has had an adverse effect on the manufacturing business."

* * *

RUFUS A. BROWN, treasurer New York Rubber Co.: "We have done a very good business; much better than in 1908. The high prices of rubber and of cotton duck have done much, however, to curtail the profits of our business. We cannot advance the prices of our product as rapidly as the prices of the raw materials have been advanced. We had our contracts made for the materials for last year's manufacture on a much lower basis and so we got through all right. Now we must contract for new supplies on a high basis. It will necessitate considerable advance in our prices. Everything is up—litharge, and other compounding materials as well as rubber. These high prices must eventually limit business to some extent."

* * *

O. A. BARNARD, manager J. H. Lane & Co.: "Trade has been very good for the past year and the indications are for even increased business next year. The tire people are all very busy, and every branch of mechanical goods is booming. The advance in prices cannot stop trade. The railroads cannot stop using air brake hose on account of some advance in price, and people will not quit using automobile tires. For certain classes of goods there is bound to be constant demand, no matter what the price may be. The price of cotton is high and will continue to be high. This year's crop was the smallest in 10 years and the demand is greater than ever."

* * *

MAX LOEWENTHAL, treasurer U. S. Rubber Reclaiming Works: "Our retail business has not quite been up to the normal of our best years, but it has been a great increase over the previous year and has been better than at any time since the beginning of the times of depression. There has been a great increase in activity, and the outlook for the next year is most promising. There has been an especial development in the line of mechanical goods and this increase we expect to increase. The high prices for all classes of goods has to some extent curtailed sales, but this has been felt most extensively by the retailers."

* * *

ARTHUR F. TOWNSEND, president Manhattan Rubber Manufacturing Co.: "Business has been good for many months past and is going to be even better in the future. Of course we suffer from the increase in the cost of new material. Increases in this line can never be followed exactly by fluctuations in the prices of the finished product. We cannot change the price of our goods to suit every fluctuation in the price of rubber and of cotton duck. The result of this is that we must be content with smaller profits and must learn to economize in our manufacturing processes. Our cotton duck contracts, however, have been made on a sliding scale, and this will help us to some extent."

* * *

F. H. APPLETON, of F. H. Appleton & Son, reclaimers of rubber: "Business in general appears to be normal, though in some branches of the rubber industry manufacturers are disposed to limit their production to actual current wants of customers, on account of the continued high cost of raw material. This is true just now of rubber footwear, and of various lines of mechanical goods. The condition described, however, evidently does not apply to the tire branch. Naturally the higher cost of crude rubber has stimulated the demand for reclaimed rubber, which from time to time comes into use in more classes of rubber products, as improvements are made in the quality of reclaimed rubber, and as compounders become more familiar with the possibilities of the use of reclaimed. But in those factories which are limiting production, the demand for reclaimed is less active than for some time in the past. The demand for the better grades of reclaimed—some of which now sell as high as 50 or 60 cents per pound—has been better sustained than for lower grades."

* * *

WILLIAM HILLMAN, manager of the Peerless Rubber Manufacturing Co.: "Business is booming, almost beyond control. Trade is so heavy that we are running night and day in our effort to catch up. There seems to be every prospect that it will keep going after the first of the year, but I wish it would hold up a bit and give us a breathing spell."

* * *

GEORGE WIES, president Eureka Fire Hose Manufacturing Co.: "We have had a very prosperous year and there is every prospect that the good work will keep up. We have just sold 30,000 feet of 2½ inch 'Eureka' hose and that is good business. On December 2 we had a meeting of all our selling force and every one of them reported that business in his section was improved and promised good orders."

* * *

A REPORT is to hand of rubber secured from planted *Hevea* trees in the Straits Settlements, at the age of 3½ years, which in London, on October 6, was reported on as "fair immature sheet, value 9*s.* 0½*d.* [= $2.20] per pound." From the experimental tapping of 100 trees once it was estimated that the yield was at the rate of 1¼ pounds per tree per year.

## THE BRITISH RUBBER CRAZE.

THE activity with which rubber plantation companies are now being brought out in Europe has never been exceeded at any period in the past. No effort has been made by THE INDIA RUBBER WORLD to keep a complete record of the new enterprises in this field, and the list which follows does not embrace even all the new rubber companies registered in London and Edinburgh from July 1 of the present year until early in November. Yet the list embraces no fewer than 77 new companies with a stated capital aggregating £6,463,345 [=$31,453,868]—an astonishing figure.

While it is true that so large an amount of fresh capital has not actually been invested in rubber within the period mentioned, the public has put in very much money—millions, in fact. It will be understood that in most cases where rubber plantation companies are organized it is for the purpose of taking over estates more or less developed, and as a rule the vendors accept shares in part payment. Again, the full number of shares authorized is not always issued at the beginning, a certain proportion being reserved for issue later, as funds are needed for development work. In addition to the companies brought out in Great Britain during the period under review, the promotion of companies has been active in Germany, Holland, and elsewhere in Europe, and several have been organized in Ceylon.

The date mentioned in connection with each company named in the list which follows is that of its registration in London, or, in a few cases, in Edinburgh. Not the least interesting feature in connection with the list which follows is the widespread distribution over the earth of the present or prospective plantations to be dealt with:

### CEYLON.

| | |
|---|---|
| Tillyfour Rubber Co., Limited; September 25 | £70,000 |
| The Rubber Estates of Bentota, Limited; November | 65,000 |
| The Sapumalkande Rubber Co., Limited; October 6 | 150,000 |
| Galle (Ceylon) Rubber Estates Syndicate, Limited; September 29 | 7,500 |

### FEDERATED MALAY STATES.

| | |
|---|---|
| Eow Seng Rubber Co., Limited; September 23 | £20,000 |
| The Lendu Rubber Co., Limited; November 3 | 60,000 |
| The Heawood Tin and Rubber Estate, Limited; September 2 | 64,000 |
| The Sungei Liang Rubber Co., Limited; August 18 | 70,000 |
| The Rubber Estates of Kedah, Limited; October | 120,000 |
| Ratanui Rubber Estate, Limited; July 28 | 35,000 |
| Chersonese (F. M. S.) Estates, Limited; August 24 | 225,000 |
| Malayan Rubber and Produce Co., Limited; August 17 | 500,000 |
| The Sungei Kruit Rubber Estate, Limited; July 31 | 55,000 |
| Mambau (F. M. S.) Rubber Co., Limited; July 1 | 25,000 |
| United Sua Betong Rubber Estates, Limited; July 15 | 70,000 |
| St. Andrew (Malay) Rubber Estate, Limited; July 28 | 25,000 |
| Killinghall (Rubber) Development Syndicate, Limited; July 23 | 25,000 |
| Sungei Krian Rubber Estate, Limited; July 26 | 75,000 |
| Brieh Rubber Estate, Limited; July 21 | 50,000 |
| Sendayau (F. M. S.) Rubber Co., Limited; August 13 | 50,000 |
| Allagar Rubber Estates, Limited; October | 85,000 |
| Carey United Rubber Estates, Limited; September 29 | 150,000 |
| "Cromlix" Rubber Estate and Produce Syndicate, Limited; October 12 | 10,000 |
| Carthusiana Rubber Estate Syndicate, Limited; October 19 | 12,000 |
| Batung Malakka Rubber Estates, Limited; October 21 | 50,000 |
| Riverside (Selangor) Rubber Co., Limited; August | 50,000 |
| Lumut Rubber Estates, Limited; October 25 | 220,000 |
| The Alor Pongsu Rubber Estate, Limited; November | 40,000 |

### STRAITS SETTLEMENTS.

| | |
|---|---|
| Val d'Or Rubber Estates, Limited; October 8 | £90,000 |
| The Merlimau Rubber Estates, Limited; September 18 | 210,000 |
| The Batu Kawan Rubber and Cocoanut Plantations, Limited; September 3 | 80,000 |
| Krubong (Malacca) Rubber Plantations, Limited; September 1 | 20,000 |
| Straits Hevea Plantation Co., Limited; November 3 | 81,000 |

### DUTCH EAST INDIES.

| | |
|---|---|
| The Besoeki Plantations, Limited; November | £100,000 |
| Nirmala (Java) Plantations and Land Co., Limited; August 16 | 180,000 |
| Sungei Buaya (Sumatra) Rubber Co., Limited; August 13 | 75,000 |
| The Sialang Rubber Estates, Limited; September | 150,000 |
| South-East Sumatra Syndicate, Limited; July 14 | 60 |
| Simpang Sumatra Rubber Co., Limited; July 16 | 60,000 |
| Sungei Kara (Sumatra) Rubber Estate, Limited; July 16 | 56,000 |
| Langen (Java) Rubber Estates Co., Limited; September 22 | 100,000 |
| Banjoewangi Syndicate, Limited; October 14 | 4,005 |
| Tamiang Rubber Estates, Limited; September 30 | 120,000 |
| Langen (Java) Rubber Estates Co., Limited; September 22 | 100,000 |
| London Langkat Syndicate, Limited; August 26 | 50,000 |
| The Bandor Sumatra Rubber Co., Limited; July | 100,000 |
| The Java Amalgamated Rubber Estates, Limited; November 5 | 175,000 |

### BRITISH NORTH BORNEO.

| | |
|---|---|
| Lok Kawi Rubber, Limited; October 20 | £200,000 |
| Bangawan Rubber, Limited; September 9 | 200,000 |
| Kimanis Rubber, Limited; October 7 | 150,000 |
| Membakut Rubber, Limited; August 12 | 150,000 |
| Borneo Planters, Limited; August 27 | 2,550 |
| South-East Borneo Rubber Plantations, Limited November 6 | 60,000 |

### DUTCH WEST BORNEO.

| | |
|---|---|
| The Sahang Rubber Estates, Limited; July 29 | £65,000 |

### SOUTHERN INDIA.

| | |
|---|---|
| The Nilambur Rubber Estates, Limited; October | £25,000 |

### WEST AFRICA.

| | |
|---|---|
| The Ivory Coast Rubber Estates, Limited; August 19 | £150,000 |
| Société Franco-Belge de la Cote d'Ivoire, Limited; August 12 | 150 |

### EAST AFRICA.

| | |
|---|---|
| The East African Rubber Plantation Co., Limited; September 20 | £90,000 |
| The Beira Rubber and Sugar Estates, Limited; July 20 | 250,000 |
| Gutta-Percha Concessions Syndicate, Limited; July 5 | 10,000 |
| G. E. A. Syndicate, Limited; July 12 | 1,000 |

### MEXICO.

| | |
|---|---|
| San Cristobal (Mexico) Rubber, Tobacco and Estates Co., Limited, July 13 | £60,000 |

### BRITISH GUIANA.

| | |
|---|---|
| The Consolidated Rubber and Balata Estates, Limited; September 8 | £250,000 |
| Balata Syndicate, Limited; July 10 | 4,880 |

### BRITISH WEST INDIES.

| | |
|---|---|
| The Jamaica Estates and Rubber Plantations, Limited; July | £300,000 |

### BRAZIL.

| | |
|---|---|
| The Para Rubber and Produce Estates, Limited; August 7 | £100,000 |

### COLOMBIA.

| | |
|---|---|
| Magdalena Rubber Plantations, Limited; October 8 | £100,000 |

### FIJI ISLANDS.

| | |
|---|---|
| Waidoi Para Rubber Plantations, Limited; July 24 | £60,000 |

### GENERAL.

| | |
|---|---|
| Incorporated Investments, Limited; July 13 | £10,000 |
| Rubber Estates Trust and Investment Corporation | 30,000 |
| Kedah Rubber Plantations, Limited; July 16 | 100 |
| Rubber Proprietary Syndicates, Limited; July 31 | 5,000 |
| Rubber and General Trust Co., Limited; August 23 | 100 |
| Walbrook Rubber Syndicate, Limited; September 24 | 25,000 |
| Wellesley Syndicate, Limited; September 29 | 5,000 |
| Escot Rubber Estates, Limited; October 1 | 20,000 |
| Marangu Rubber and Coffee Estates, Limited; July 24 | 10,000 |

REPAIR MEN CHUCKLE.—Tires will no doubt advance in price again, as the demand is greater. The repair man chuckles each time the price advances, for he knows the owner will be calling for him each time the price goes up.—*Cleveland News.*

# American Trade with the Amazon.

TO THE EDITOR OF THE INDIA RUBBER WORLD: My interest has been attracted lately by a number of articles in the New York newspapers on the subject of trade with South America, and as this is a matter which doubtless appeals to many of your readers, I venture to offer some suggestions. It seems appropriate that your journal should give space to such questions, since Brazil is the source of perhaps 60 per cent. of all the rubber produced in the world. My own views are based upon an experience of more than twenty years spent in Brazil as traveling salesman, commercial salesman, and journalist, together with an acquaintance meanwhile, and before, in the United States and Europe.

It may be of interest first to consider the volume of the commerce of Brazil, introducing for that purpose statistics from an official source. The year chosen is 1906, which is the latest date for which complete figures are just now available:

EXPORTS.

| To— | Amazon and Pará. | All Brazil. |
|---|---|---|
| United States | £8,780,802 | £18,627,520 |
| Great Britain | 5,158,973 | 8,544,904 |
| Germany | 1,470,362 | 9,341,357 |
| France | 1,881,504 | 6,507,470 |
| Italy | ..... | 510,118 |
| Portugal | ..... | 312,755 |
| Other Countries | 961,483 | 9,215,356 |
| Total | £18,253,124 | £53,059,480 |

IMPORTS.

| | | |
|---|---|---|
| Great Britain | £1,480,344 | £9,294,707 |
| Germany | 987,715 | 4,873,140 |
| France | 474,103 | 3,057,305 |
| United States | 363,456 | 3,805,128 |
| Portugal | 286,068 | 2,174,690 |
| Italy | 79,098 | 1,094,826 |
| Other countries | 280,076 | 8,904,245 |
| Total | £3,950,860 | £33,204,041 |

These figures show that the United States is importing from Brazil yearly goods for which she pays £18,627,520, while exporting to that country merchandise, the returns of which only net £3,805,123. In the Amazon valley the difference is still more noticeable. When this country bought in 1906 $42,674,997 (gold) worth of merchandise, principally rubber, there was the insignificant return of $1,766,496 for goods sold there.

The question naturally arises, Why does the United States sell so little in Brazil? Is not the American manufacturer able to compete with the European market, the trade of which is so large in Brazil?

Among the many causes of the failure of American trade in Brazil, I can, from experience, point out the principal ones, which are:

The lack of American transportation;
The banking facilities;
The untrained salesmen;
The use of the Spanish language.

## TRANSPORTATION.

The freight charges on many articles imported into Brazil, and especially at Pará and Manáos, are much less from Europe than from the United States.

The trip from Liverpool to Pará, for instance, is made in 21 days. The same steamer makes the trip from New York to Pará in 14 days. Notwithstanding the fact that the voyage is shorter, the charges on freight from America are 30 per cent. higher than those of Europe.

Many articles, such as typewriters, phonographs, electrical supplies, etc., although having their origin in America, are imported to Brazil from Europe. For this there is a definite reason.

The Brazilian government even attempted to aid the American commerce by making a reduction of 30 per cent. in the duties on many articles made in America. But this was to no avail, since the discount on duty did not cover the high freight charge on the goods purchased from the United States.

Not only is this detrimental, but there actually is a lack of navigating companies to carry on the American trade in Brazil. Only three regular steamship lines are running between here and Brazil: Lamport & Holt, the Booth Co., and Prince Line, and they are European companies. Since these ships do not have sufficient accommodation, and since their speed does not exceed 12 knots an hour, they could not supply a large demand for transportation to Brazil.

The service on board of these steamers could be much improved, and the time between sailings is fifteen days. On the other hand, the steamers from Europe, besides having good accommodations for passengers, appear in Brazil very often.

## BANKING FACILITIES.

The American manufacturers and traders are giving away over $1,000,000 yearly to the British banking concerns in Brazil. The following operations carried on by the foreign banks in Brazil during 1906 will corroborate my assertion:

THE LONDON AND RIVER PLATE BANK, LIMITED.

[Head office in London; branches and agencies all over Brazil.]

*Dividends.*

| | | | |
|---|---|---|---|
| 1895 | 18% | 1901 | 18% |
| 1896 | 20% | 1902 | 18% |
| 1897 | 20% | 1903 | 19% |
| 1898 | 20% | 1904 | 20% |
| 1899 | 20% | 1905 | 20% |
| 1900 | 20% | 1906 | 20% |

*Liabilities—September 30, 1907.*

| | | |
|---|---|---|
| Capital paid up | £1,200,000 | |
| Reserve fund | 1,100,000 | |
| Acceptances—Account branch | 2,570,155 | |
| Acceptances—Customers drafts under merchandise credits | 836,729 | |
| Bills advised, drafts in transit | 1,226,015 | |
| Current accounts and deposits | 18,052,388 | |
| Montevideo branch | 31,585 | |
| Bills for collection | 2,184,941 | |
| Buenos Aires Clearing Bank | 644,398 | |
| Rebate on bills not due | 72,013 | |
| Profit and loss | 303,747 | £28,221,971 |

*ASSETS—September 30, 1909.*

| | | |
|---|---|---|
| Cash on hand, at bankers | £6,571,527 | |
| Cash on hand, Clearing Bank | 644,398 | |
| Bills discounted, securities | 18,650,123 | |
| Bills for collection | 2,184,941 | |
| Bank premises | 170,982 | £28,221,971 |
| Gross profit, in 1906 | £622,998 | |
| Net profit | 331,637 | |

THE LONDON AND BRAZILIAN BANK, LIMITED.

| | |
|---|---|
| Capital | £750,000 |
| Reserve fund | 698,000 |
| Gross profit | 246,128 |
| Net profit | 122,071 |

THE BRITISH BANK OF SOUTH AMERICA, LIMITED.

| | |
|---|---|
| Capital | £500,000 |
| Reserve fund | 450,959 |
| Gross profit | 236,985 |
| Net profit | 150,291 |

BRASILIANISCHE BANK FUER DEUTSCHLAND.

| | |
|---|---|
| Capital | *Marks*, 10,000,000 |
| Reserve fund | 2,341,980 |
| Gross profit | 3,300,693 |
| Net profit | 1,709,819 |

These official statements serve to show that the four banks, operating only with £2,950,000 of capital, are clearing yearly, as

they did in 1906, profits aggregating the important sum of £1,271,611, or $6,180,023, American gold—more than 43 per cent.

Taking now in consideration the extent of American trade in Brazil, especially in the buying of rubber and coffee, it will not be exaggeration to assume that the American part of these profits amounts to $2,000,000.

Could not the American manufacturers keep the couple of million dollars for themselves without being so philanthropic as to give it to their brothers, the Britishers?

Could they not have their own banks in Brazil?

Great enterprises born in America, such as the Madeira-Mamoré railway, the ports of Pará and the like, are obliged to be financed in Europe, because no American banks exist in Brazil to which they can apply, and the ultimate result is that the supplies they require are purchased in Europe.

A Brazilian importer buying goods from the states is obliged to pay three commissions in exchanging his money:

First, the local British bank, receiving from the American manufacturer a bill for collection, presents it to the Brazilian in pounds sterling. The Brazilian merchant pays it with the currency of the country, which the bank reduces to pounds sterling. Now, the bank settles the bill with the American manufacturer, exchanging again the pounds for dollars.

And yet there is no safer place in the world for the investment of money than the Brazilian market. Over all the Latin-American republics Brazil has won the supremacy, not only because of her stable government, but also because she has made every effort to improve the conditions of the country and to develop the immense natural resources. The government loans are paid punctually, and great funds are deposited in London for the future payments.

The inexhaustible rubber forests of the Amazon are furnishing and will still supply the world's need of crude rubber for a great while to come. Minerals are discovered everywhere in Brazil, and the constant European immigration is aiding to the forces needed to develop the riches of that country. Capital employed in Brazil not only is safe, but is sure to turn out a very good profit.

THE SALESMAN AND THE SPANISH LANGUAGE.

Other great factors in the failure of American trade in Brazil are the use of the Spanish language in propaganda work and the unpreparedness of the average traveling salesman for transacting business in that country.

The greatest mistake ever perpetrated by the American manufacturer in connection with the propaganda work, has been in sending his advertising literature to Brazil in Spanish. Still more inexcusable is it to send out salesmen who speak only Spanish.

Too many American manufacturers have the idea that Spanish and Portuguese are similar languages, since one is derived from the other. Yet it is a great mistake. The difference between Portuguese and Spanish is as marked as that which exists between Dutch and German. I don't suppose that an American manufacturer would send out to Germany a representative who could only speak Hollandish.

The truth is that the Portuguese-speaking people despise the Spanish language. The most expensive catalogue printed in Spanish, sent to Brazil, goes at once to the waste basket.

Imagine, now, a first class American salesman, however well acquainted with the methods of trade in the Spanish-American countries—which differ greatly from those of Brazil—employing in the latter country the same methods in selling his goods.

The Brazilian merchant is a highly educated person, with all the European refinements. It is not unusual there to find a man of university training behind the counter of a store, or a clerk in an office. The Brazilian merchant meets the foreign salesmen not only commercially but also socially. He extends his politeness even to inviting them to his home or introducing them to his club.

But unfortunately, not accustomed to these conditions, the American salesmen do not meet the expectations of the Brazilian merchant.

It is worth while for the American bankers, and especially the American manufacturers, to take into consideration the points which I have tried here to outline briefly but clearly.

MIQUEL P. SHELLEY.

Pará, Brazil.

## RUBBER IN THE IVORY COAST.

UNDER the intelligent and progressive policy of the colonial authorities in French West Africa in relation to rubber, not only is the production of this material in that region steadily increasing, but it promises to be long maintained, not only through the conservation of the native resources but also on account of the gradual systematic planting of the species best suited to the different colonies. Of late the Ivory Coast has come to be of importance in the production of rubber, and the situation in that colony has been the subject recently of some very interesting studies.

Mention may be made particularly of a report on a scientific mission in East Africa by Mons. Aug. Chevalier in *Nouvelles Archives des Missions Scientifiques*, in connection with which is given an interesting map on a considerable scale of the forest regions of the Ivory Coast, indicating particularly the distribution of rubber species. He indicates many different *lianes* (creepers), in addition to the *Funtumia* trees.

The conclusions of this authority are supported in a later report by Mons. L. Nicolas, sub inspector of agriculture in French West Africa, in *L'Agriculture pratique des pays chauds* (Paris, October, 1909). Of special interest in the latter paper is the information regarding the *Funtumia* species. Formerly the rubber producing trees of Lagos and other West Africa were identified as *Kickxia Africana*, but latterly they have been included in the genus *Funtumia* (Stapf), of which no fewer than seven species are referred to by Mons. Nicolas, including *Funtumia elastica*, which perhaps is the most important.

The value of the *Funtumia* species has been referred to frequently in these pages (see THE INDIA RUBBER WORLD, October 1, 1909—page 28), and doubtless it will come into wide cultivation throughout the rubber zone of Africa, since its product is of a good quality and it is capable of cultivation under conditions where *Hevea* has not proved successful. Mons. Nicolas quotes results from the coagulation of *Funtumia* rubber through exposure to the air, by boiling with the juice of the "bossanga" vine, evaporation in the sun, and smoking.

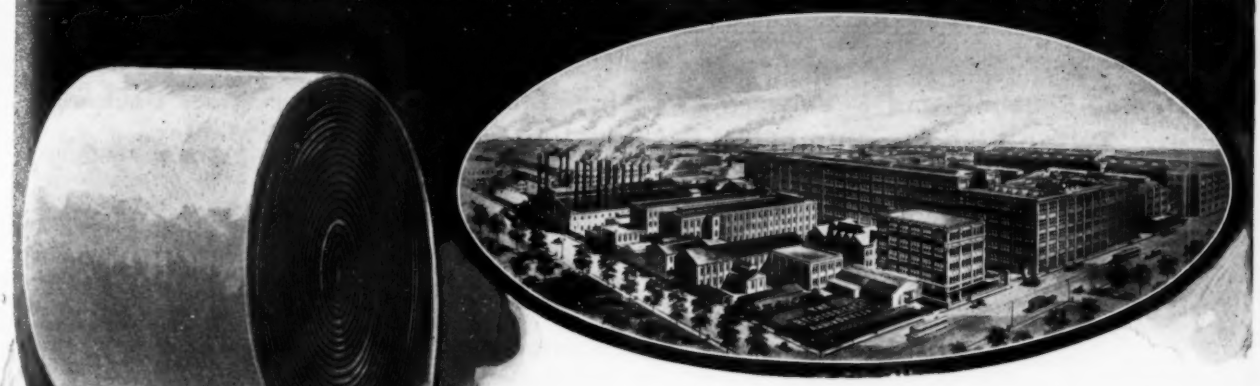
There are also in the Ivory Coast several other rubber trees, including at least three species of *Ficus*, and finally may be mentioned several of the more important species of *Landolphia*. To sum up, the Ivory Coast appears to have valuable natural resources in rubber, and to be adapted for rubber cultivation both of which points seem likely to be taken advantage of in supplying the French markets, with every encouragement from the government.

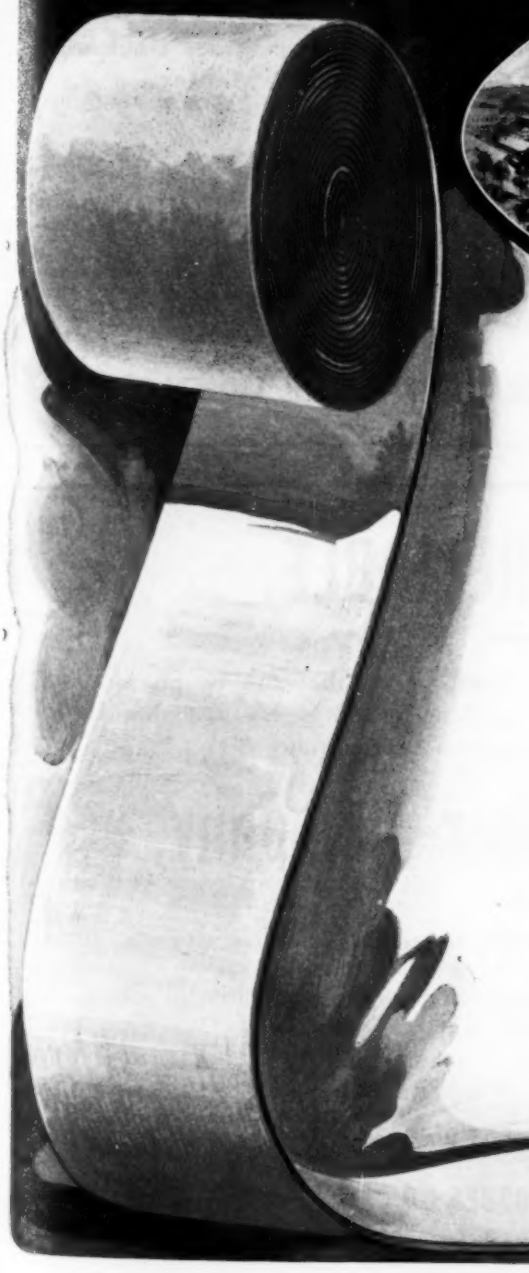
Exports of rubber from the Ivory Coast increased from 456,377 kilos in 1907 to 915,642 kilos in 1908.

THE cable manufacturers of Austria and Hungary, about the first of October, announced a rise in the price of all their insulated wire products, from 15 to 25 per cent. on account of the advancing cost of rubber and other materials, and the recent increase in the scale of wages.

AMONG recent new articles of equipment for rubber plantations in the Far East may be mentioned carts for the transport of latex from the trees to the central factories. They are made in 80 gallons' capacity for bullock draft, and 40 gallons for hand draft. They are being introduced on several of the larger estates.

# GOODRICH RUBBER BELTING





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"Pilgrim," for all general requirements.
"Rob Roy," our commercial grade for ordinary work.

***SPECIAL BRANDS***

"Goodrich Axle Lighting," of special design for railroad axle lighting.
"Sterling," what its name implies.
"Pinnacle," the strongest and highest quality ***coverless belt*** produced.
"Marathon," a coverless belt for high speed wood working machines.

***Elevator Belts*** for all kinds of mine and grain elevating.
***Conveyor Belts*** for all conveying uses.
***Polishing Belts*** for emery, and polishing wheels.

**THE B. F. GOODRICH COMPANY**
**AKRON, OHIO**

*Mention The India Rubber World when you write.*

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The policy of furnishing only the finest goods that can be produced with perfect materials, latest and best machinery. and highly skilled workmen of long experience, has been, is now, and will continue to be, the policy of

# The Mechanical Rubber Company,

**CHICAGO, ILL.**

**Branch Store, No. 1810 Blake Street, Denver, Colo., where we carry a full line of goods.**

Manufacturers of all kinds of rubber goods for mechanical uses—Hose, Belting, Packing, Gaskets, Bicycle Tires, Specialties, Moulded Goods, Etc., Etc.

**If you are unable to satisfy your trade with goods you are supplying,**
**If you are in search of good goods at fair prices,**
**If you cannot get quick deliveries,**
**If you are not getting fair value for your money,**
**IN ANY EVENT,**

**SEND TO US FOR SAMPLES AND QUOTATIONS. . . . .**
**WE CAN SUIT YOU EVERY WAY.**

FACTORY, GRAND AVE. & ROCKWELL STS

**THE MECHANICAL RUBBER CO., 230 Randolph St., Chicago, Ill.**

# Recent Patents Relating to Rubber.

## UNITED STATES OF AMERICA.

ISSUED NOVEMBER 2, 1909.

NO. 938,537. Tire protector anchor. S. C. Wolfe, Angola, Ind.

938,731. Hose coupling and gasket therefor. J. E. Ward, assignor, to Ward Equipment Co., both of New York City.

938,999. Vehicle tire. C. F. Fisk, Allentown, N. J.

939,036. Hose coupling. W. F. Koper, assignor of one-half to F. Marzluff, both of Chillicothe, Ohio.

939,096. Hose coupling. I. I. Rose, Thebes, Ill.

939,190. Vehicle Wheel. [With inflatable elastic tube.] E. Dettelbach and E. W. B. Powell, assignors of one-third each to A. Nisbet and T. W. Baird, all of Denver, Colo.

939,195. Hose coupling. J. E. Ward, assignor to Ward Equipment Co., both of New York City.

TRADE MARKS.

38,574. The Star Rubber Co., Akron, Ohio. The words *Baby's Favorite*. For rubber nipples.

42,734. The Revere Rubber Co., Boston. The representation of Paul Revere on horseback. For mechanical rubber goods, and pneumatic and solid tires.

ISSUED NOVEMBER 9, 1909.

939,209. Speed indicating or recording device. W. H. Bristol, Waterbury, Conn.

939,211. Air hose coupling. E. L. Brown, Cleveland, assignor of one-third each to P. L. Andrews, Toledo, and C. Eisle, Cleveland, Ohio.

939,327. Elastic tire for vehicle wheels. Bento Martins de Sá, Rio de Janeiro, Brazil.

939,342. Vulcanizer. F. E. Smith, Hartford, Conn.

939,428. Pneumatic tire. J. L. Maitland, Passaic, assignor of one-third each to W. A. Callanan, Jersey City, and C. Rider, Mountainville, N. J.

939,434. Hose coupling. V. P. McVoy, Mobile, Ala.

939,435. Hose coupling. *Same.*

939,436. Hose coupling. *Same.*

939,437. Hose coupling. *Same.*

939,474. Tire protector. F. R. Colvin and C. R. Colvin, Lansing, Mich.

939,491. Anti slipping attachment for tires. M. J. Frambach, assignor of one-half to E. F. Broders, Hartley, Iowa.

939,520. Syringe or the like [with hot water bottle]. C. P. Leyner, Boston, assignor to J. G. Leyner, Denver, Colo.

939,524. Cushion tire. W. E. Marengo, Worcester, assignor of one-half to J. B. Prouix, Southbridge, Mass.

939,610. Tire for vehicle wheels. [Provided with a casing whose sides are composed of interlocked alternative flexible and inflexible members.] T. Midgely, Worthington, Ohio.

939,611. Tire for vehicle wheels. Same.

939,619. Tire fastener. [For solid rubber tires.] L. M. Nelson, Douglas, Wyo.

939,638. Resilient tire. W. H. Rowling, Salinas, Cal.

939,956. Superheater for use in connection with vulcanizers and other apparatus. J. Berliner, Hanover, Germany, assignor to E. Berliner, Washington, D C.

ISSUED NOVEMBER 16, 1909.

940,014. Vehicle tire. C. O. Henderson, Dayton Ohio, assignor of one-third to W. A. Pickens, Indianapolis, Ind.

940,243. Means for attaching demountable rims. H. H. Ford, assignor of one-half to H. H. De Loss, both of Bridgeport, Conn.

940,337. Horseshoe. G. Loeffler, Tampa, Fla.

940,460. Cushion tire. G. G. Hayes, Glenwood Springs, Col.

940,528. Tire. W. D. Harris, assignor to Harris Tire and Rubber Co., both of Philadelphia.

940,591. Tire armor. B. F. Ginn, Lenox, Ia.

*Design.*

40,358. Interlocking tile. G. H. Quennard, Allendale, N. J.

ISSUED NOVEMBER 23, 1909.

940,670. Knife for tapping rubber trees. O. O. Bradford, Palolo Valley, Honolulu, Hawaii.

940,919. Cushion tire. C. O. Baughman, assignor to W. J. Frank, both of Akron, Ohio.

941,015. Resilient tire for vehicles. G. O. Draper, Hopedale, Mass.

941,058. Wheel tire. [Cylindrical and cored.] F. L. Berg, Owatonna, Minn.

941,150. Hose and pipe coupling. S. M. Johnson, Chicago.

REISSUES.

13,045. Protector for rubber tires. H. R. Palmer, Cleveland, Ohio, assignor to F. E. McEwen.

ISSUED NOVEMBER 30, 1909.

941,410. Hose rack. G. F. D. Trask, Orange, N. J.

941,453. Cushioned wheel for vehicles. W. J. Higman, Denver, Colo.

941,536. Piston packing ring. T. H. Renaud, assignor of one-third each to W. Bawden and E. L. Adreon, Jr., all of St. Louis.

941,652. Air hose coupling. F. W. Rock, assignor of one-half to E. A. Field, both of Detroit, Mich.

941,659. Elastic connection strap. J. J. Shea, Hartford, Conn., assignor to The Hartford Rubber Works Co.

941,871. Pneumatic tire. C. M. Gautier, Putney, London, England.

941,926. Spring wheel. W. L. Johns, Soquel, Cal.

941,962. Pneumatic tire shoe manufacturing machine. W. C. State, assignor to F. A. Seiberling, both of Akron, Ohio.

941,990. Fire hose coupling. H. J. Hickey, Tomahawk, Wis.

TRADE MARKS.

43,318. Kautschuk Gesellschaft Schön & Co., Harburg a/d Elbe, Germany. The word *Penghulu*. For raw india-rubber, gutta-percha, and balata.

45,316. Boston Belting Co. The word *Roxbro*. For rubber hose.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each postpaid.]

## GREAT BRITAIN AND IRELAND.

**PATENT SPECIFICATIONS PUBLISHED.**

The number given is that assigned to the Patent at the filing of the Application, which in the case of these listed below was in 1908.
* *Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 3, 1909.]

14,504 (1908). Pneumatic tire tread of hard and soft materials. S. Z. de Ferranti, Grindleford Bridge, Derbyshire.

14,554 (1908). Electrically heated vulcanizer for tire repairs. P. Allman, Manchester, and G. W. T. Leeson, Lymm.

14,582 (1908). Protective band for pneumatic tires. G. H. Demougeot, Paris, France.

14,610 (1908). Portable steam vulcanizer for tire repairs. J. Berliner, Hanover, Germany.

14,645 (1908). Non-slipping device for tires. J. H. Hall, Sheffield.

14,651 (1908). Separate tread for pneumatic tires. J. Jelley, Coventry.

14,703 (1908). Tubular tire fabric of unextensible threads. A. Boden, Grossröhrsdorf, Germany.

14,716 (1908). Chain protector for pneumatic tires. L. W. Williams, Cathcart, and W. T. G. Ellis, Glasgow.

14,771 (1908). Pneumatic tire with tread of rubber blocks attached to a metallic band. H. Talasso, Paris, France.

14,830 (1908). Method of utilizing india-rubber waste. B. Roux, Paris, France.

14,833 (1908). Rim for pneumatic tires, single or dual. C. W. Pradeau, London.

14,872 (1908). Metallic protective tread for tires. B. Clarke-Lens, Eastbourne.

14,891 (1908). Wooden felly for use in connection with solid rubber tires. N. Macbeth, St. Annes-on-Sea.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 10, 1909.]

15,081 (1908). Tire inflating pump. C. Paterson, Birmingham.

15,121 (1908). Pneumatic tire cover attached by rings and hooks. J. R. Trigwell, London.

15,145 (1908). Elastic tire filled with a resilient composition consisting of oils and other materials. R. H. and E. M. Pybus, The Old Lodge, Derby.

15,169 (1908). Puncture preventing band for tires consisting of overlapping plates of steel. A. F. Walker and J. Gilles, London.

15,305 (1908). Tire inner tubes constructed of layers of rubber and open mesh bias fabric. I. S. McGlehan.

15,371 (1908). Fabric for lining tire covers. M. Staamann, Waltershausen, Germany.

15,460 (1908). Pneumatic tire tread with staggered rows of ribs. W. J. Thorold, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 17, 1909.]

15,546 (1908). Disk wheel with pneumatic tire. G. Davis and W. Brown, London.

15,567 (1908). Teething pad. F. Schutze, trading as F. Schutze & Co., London.

15,675 (1908). Elastic tire of wedge-shaped laminae of leather or other material and rubber. E. Sabata y Roca, Barcelona, Spain.

15,870 (1908). Pneumatic tire with metallic reinforcement. A. Raimon, Paris, France.

15,968 (1908). Tire filled with fluid composition which solidifies. Equatorial Trading and Mfg. Co., E. A. Muskett, and J. B. Scammell, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 24, 1909.]

16,322 (1908). Linen protective band to be placed between the air tube and the cover of a tire. J. Cox, Tutbury.

16,394 (1908). Tubular tire formed with continuous narrow radial chambers. W. Brameld, Paterson, New Jersey.

16,424 (1908). Necks, stoppers and valves of hot water bottles, air beds, and the like.

## THE FRENCH REPUBLIC.

**PATENTS ISSUED (with Dates of Application).**

402,818 (May 8, 1909). E. Neuhart. Pneumatic tire and protector.

402,834 (May 8). H. Labre. Elastic wheel.

402,835 (May 8). E. Lapisse. Pneumatic tire.

402,909 (May 11). J. A. C. Merle. Elastic tire.

402,970 (May 12). H. Robillard. Leather cover for pneumatic tires.

403,012 (May 13). A. Roster. Attachment for tires.

# Official India-Rubber Statistics.

*For the United States Fiscal Year Ended June 30, 1909.*

## INDIA-RUBBER.

### I.—Imports of Crude India-Rubber, by Countries.

| FROM— | Pounds. | Value. |
|---|---|---|
| *Europe:* | | |
| Belgium | 3,635,990 | $2,720,723 |
| France | 1,967,774 | 1,571,329 |
| Germany | 4,503,286 | 2,995,125 |
| Netherlands | 112,163 | 96,134 |
| Portugal | 1,882,882 | 1,025,532 |
| United Kingdom | 12,825,192 | 11,168,879 |
| Total | 24,927,287 | $19,577,722 |
| *North America:* | | |
| British Honduras | 24,263 | $16,960 |
| Canada | 4,311 | 3,324 |
| Costa Rica | 104,880 | 66,096 |
| Guatemala | 79,657 | 36,616 |
| Honduras | 76,133 | 39,985 |
| Nicaragua | 427,644 | 232,764 |
| Panama | 132,907 | 82,136 |
| Salvador | 16,152 | 9,901 |
| Mexico | 15,460,365 | 5,466,904 |
| British West Indies | 2,459 | 884 |
| Cuba | 14,486 | 7,881 |
| Total | 16,343,257 | $5,963,451 |
| *South America:* | | |
| Brazil | 43,993,670 | $34,265,807 |
| Colombia | 416,645 | 258,999 |
| Ecuador | 690,579 | 365,399 |
| Peru | 266,340 | 213,567 |
| Venezuela | 590,550 | 423,631 |
| Total | 45,957,784 | $35,527,403 |
| *Asia:* | | |
| Chinese Empire | 834 | $585 |
| British India | 14,998 | 11,094 |
| Straits Settlements | 753,451 | 230,753 |
| Other British Indies | 351,397 | 391,609 |
| Dutch East Indies | 7,840 | 5,258 |
| Japan | 200 | 103 |
| Siam | 2,638 | 1,615 |
| Total | 1,131,358 | $641,009 |
| *Oceania:* | | |
| Australia, Tasmania | 209 | $138 |
| GRAND TOTAL | 88,359,895 | $61,709,723 |
| Total, 1907-08 | 62,233,160 | $36,613,185 |
| Total, 1906-07 | 76,963,838 | 58,919,981 |
| Total, 1905-06 | 57,844,345 | 45,114,450 |
| Total, 1904-05 | 67,234,256 | 49,878,366 |

### II.—Imports of Crude India-Rubber, by Customs Districts.

| FROM— | Pounds. | Value. |
|---|---|---|
| Baltimore, Md. | 66,853 | $24,286 |
| Boston and Charlestown | 324,348 | 197,282 |
| New York | 81,479,404 | 59,265,998 |
| Galveston, Tex. | 4,752 | 2,110 |
| Mobile, Ala. | 2,203 | 874 |
| New Orleans, La. | 174,792 | 67,466 |
| Tampa, Fla. | 200 | 79 |
| Corpus Christi, Tex. | 187,997 | 56,577 |
| Paso del Norte, Tex. | 135,099 | 39,857 |
| Salina, Tex. | 5,903,429 | 2,004,235 |
| Puget Sound, Wash. | 209 | 138 |
| San Francisco, Cal. | 72,006 | 43,391 |
| Champlain, N. Y. | 387 | 511 |
| Chicago | 2,374 | 1,589 |
| Cuyahoga, Ohio | 5,008 | 4,381 |
| Niagara, N. Y. | 847 | 906 |
| Louisville, Ky. | 87 | 43 |
| Total | 88,359,895 | $61,709,723 |

### III.—Imports of Manufactures of India-Rubber, by Countries.

[+ Indicates Increase; — indicates Decrease, compared with the preceding year.]

| FROM— | Value. |
|---|---|
| Austria-Hungary | $81,637— |
| Belgium | 135,158+ |
| Denmark | 4 |
| France | 229,152— |
| Germany | 544,511— |
| Italy | 59,315— |
| Netherlands | 216— |
| Norway | 339— |
| Russia in Europe | 19,666+ |
| Spain | 439+ |
| Sweden | 5 |
| Switzerland | 655+ |
| Turkey in Europe | 21 |
| United Kingdom | 315,721— |
| Canada | 1,599— |
| Panama | 8 |
| Mexico | 517+ |
| British West Indies | 170 |
| Cuba | 1,537 |
| Colombia | 5 |
| Chinese Empire | 19 |
| Hongkong | 324+ |
| Japan | 448+ |
| Australia and Tasmania | 7 |
| Philippine Islands | 6 |
| French Africa | 85 |
| Turkey in Africa—Egypt | 6 |
| Total | $1,391,770 |
| Total, 1907-08 | $1,956,500 |
| Total, 1906-07 | 2,262,783 |
| Total, 1905-06 | 1,992,413 |
| Total, 1904-05 | 1,389,064 |

### IV.—Imports of Manufactures of India-Rubber, by Customs Districts.

| FROM— | Value. |
|---|---|
| Baltimore, Md. | $47,948 |
| Bangor, Me. | 154 |
| Boston and Charlestown | 131,444 |
| Bridgeport, Conn. | 128 |
| Fall River, Mass. | 6,897 |
| Georgetown, D C. | 245 |
| Hartford, Conn. | 476 |
| Newark, N. J. | 630 |
| Newport, R. I. | 107 |
| Newport News, Va. | 4,321 |
| New York | 1,036,128 |
| Philadelphia | 25,518 |
| Porto Rico | 2,404 |
| Providence, R. I. | 443 |
| Galveston, Tex. | 3,611 |
| New Orleans, La. | 13,069 |
| Alaska | 137 |
| Hawaii | 943 |
| Los Angeles, Cal. | 597 |
| Puget Sound, Wash. | 3,640 |
| San Diego, Cal. | 192 |
| San Francisco, Cal. | 10,474 |
| Willamette, Oreg. | 380 |
| Buffalo Creek, N. Y. | 282 |
| Champlain, N. Y. | 175 |
| Chicago, Ill. | 28,369 |
| Cuyahoga, Ohio | 864 |
| Detroit, Mich. | 12,957 |
| Genesee, N. Y. | 1,197 |
| Miami, Ohio | 249 |
| Milwaukee, Wis. | 347 |
| Minnesota, Minn. | 1,945 |
| Niagara, N Y. | 135 |
| Oswego, N. Y. | 177 |
| Vermont, Vt. | 142 |
| Albany, N. Y. | 265 |
| Cincinnati, Ohio | 2,905 |
| Denver, Col. | 38,090 |
| Dubuque, Iowa | 545 |
| Grand Rapids, Mich. | 487 |
| Indianapolis, Ind. | 285 |
| Kansas City, Mo. | 1,659 |
| Pittsburg, Pa. | 225 |
| St. Louis, Mo. | 9,988 |
| Other ports | 596 |
| Total | $1,391,770 |

### V.—Exports of Manufactures of India-Rubber (and Gutta-Percha), by Customs Districts.

| FROM— | Belting, Packing, and Hose. | Boots and Shoes. | All other Rubber. |
|---|---|---|---|
| Baltimore, Md. | $481 | $.... | $22 |
| Bangor, Me. | 4,314 | 396 | 2,607 |
| Bath, Me. | 298 | .... | .... |
| Boston, Mass. | 7,075 | 358,602 | 260,522 |
| Brunswick, Ga. | 1,634 | .... | .... |
| New Bedford, Mass. | 28 | .... | .... |
| New York | 993,805 | 848,712 | 2,594,715 |
| Passamaq'd'y, Me | 3,565 | 105 | 1,467 |
| Philadelphia | 27,132 | .... | 698 |
| Portland and Falmouth, Me. | .... | 3 | .... |
| Galveston, Tex. | 235 | .... | 708 |
| Key West, Fla. | 100 | .... | 5 |
| Mobile, Ala. | .... | .... | 2,292 |
| New Orleans, La. | 11,497 | 242 | 13,261 |
| Arizona | 61,479 | 143 | 6,311 |
| Brazos de Santiago, Texas | 61 | .... | 76 |
| Corpus Christi | 24,626 | 823 | 36,113 |
| Paso del Norte, Tex. | 46,266 | 494 | 8,877 |
| Saluria, Tex. | 30,961 | 193 | 8,750 |
| Alaska | 20,892 | 24,341 | 589 |
| Hawaii | .... | 66 | .... |
| Los Angeles, Cal. | 8 | .... | .... |
| Puget S'd, Wash. | 11,661 | 12,924 | 26,226 |
| San Diego, Cal. | 880 | 187 | 29 |
| San Francisco | 113,799 | 15,260 | 160,457 |
| Buffalo Creek, N.Y. | 940 | 21 | 126,450 |
| Cape Vincent, N.Y. | .... | .... | 1,170 |
| Champlain, N. Y. | 3,484 | 13 | 62,696 |
| Cuyahoga, Ohio | 100 | .... | .... |
| Detroit, Mich. | 30,867 | 9,102 | 47,129 |
| Duluth, Minn. | 1,177 | 111 | .... |
| Huron, Mich. | 1,789 | 1,658 | 13,879 |
| Memphemagog Vt | 23,685 | 8,670 | 97,048 |
| Michigan, Mich. | 7 | .... | .... |
| Minnesota, Minn. | 2,149 | 46 | 22,165 |
| Montana & Idaho | 3,410 | 588 | 1,678 |
| Niagara, N. Y. | 47,767 | 3,057 | 131,868 |
| N. and S. Dakota | 12,892 | 727 | 22,815 |
| Oswegatchie, N. Y. | .... | 35 | 56,957 |
| Superior, Mich. | 2,220 | .... | 14 |
| Vermont, Vt. | 7,161 | 6,154 | 116,362 |
| Total | $1,498,445 | $1,292,673 | $3,823,956 |

## GUTTA-PERCHA.

### I.—Imports of Crude Gutta-Percha, by Countries.

| FROM— | Pounds. | Value. |
|---|---|---|
| British East Indies | 70,880 | $4,424 |
| France | 535 | 325 |
| Germany | 167,956 | 66,870 |
| United Kingdom | 7,457 | 7,856 |
| Panama | 8,731 | 2,461 |
| Total | 255,559 | $82,136 |
| Total, 1907-08 | 188,610 | $100,305 |
| Total, 1906-07 | 546,890 | 201,339 |
| Total, 1905-06 | 500,770 | 188,161 |
| Total, 1904-05 | 665,217 | 210,188 |

[NOTE.—The imports of Gutta-percha credited to South America are undoubtedly Balata.]

GUTTA-JELUTONG (PONTIANAK).

| FROM— | Pounds. | Value. |
|---|---|---|
| Netherlands | 3,325 | $182 |
| United Kingdom | 719,147 | 26,781 |
| Straits Settlements | 24,103,824 | 825,409 |
| Total | 24,826,296 | $852,372 |
| Total, 1907-08 | 22,803,303 | $1,039,776 |
| Total, 1906-07 | 28,437,660 | 1,085,098 |
| Total, 1905-06 | 21,390,116 | 733,074 |
| Total, 1904-05 | 19,104,911 | 641,319 |
| Total, 1903-04 | 14,887,416 | |
| Total, 1902-03 | 13,084,817 | |
| Total, 1901-02 | 16,850,821 | |
| Total, 1900-01 | 9,371,067 | |

BALATA.

| FROM— | Pounds. | Value. |
|---|---|---|
| Netherlands | 19,690 | $11,321 |
| Portugal | 111,743 | 46,995 |
| United Kingdom | 17,787 | 8,837 |
| Canada | 2,009 | 1,205 |
| British West Indies | 80,758 | 29,927 |
| British Guiana | 258,149 | 129,021 |
| Dutch Guiana | 8,073 | 3,636 |
| Venezuela | 658,809 | 291,930 |
| Total | 1,157,018 | $522,872 |
| Total, 1907-08 | 584,582 | $276,756 |
| Total, 1906-07 | 799,201 | 305,041 |
| Total, 1905-06 | 374,220 | 152,689 |

### II.—Value of Imports of Manufactures of Gutta-Percha, by Countries.

| FROM— | Value. |
|---|---|
| Belgium | $18,207 |
| France | 2,463 |
| Germany | 43,744 |
| Netherlands | 4 |
| United Kingdom | 4,763 |
| Canada | 2,610 |
| Mexico | 28 |
| Total | $71,819 |
| Total, 1907-08 | $93,545 |
| Total, 1906-07 | 191,064 |
| Total, 1905-06 | 208,172 |
| Total, 1904-05 | 217,735 |

## SCRAP RUBBER.

### I.—Quantity and Value of Imports, by Countries.

| FROM— | Pounds. | Value. |
|---|---|---|
| Austria-Hungary | 136,536 | $3,936 |
| Belgium | 222,795 | 15,636 |
| Bulgaria | 27,200 | 1,162 |
| Denmark | 385,371 | 27,854 |
| France | 1,295,919 | 107,946 |
| Germany | 4,567,289 | 360,154 |
| Italy | 7,475 | 443 |
| Netherlands | 673,999 | 45,908 |
| Norway | 584,681 | 37,821 |
| Russia in Europe | 3,299,367 | 274,864 |
| Sweden | 519,243 | 45,826 |
| Switzerland | 65,041 | 5,458 |
| Turkey in Europe | 718,490 | 56,514 |
| United Kingdom | 3,050,019 | 209,679 |
| Bermuda | 2,897 | 113 |
| Canada | 4,366,115 | 320,375 |
| Newfoundland, Labrador | 61,814 | 4,835 |
| Panama | 630 | 32 |
| Mexico | 47,856 | 2,999 |
| British West Indies | 8,465 | 693 |
| Cuba | 86,948 | 5,773 |
| Chile | 900 | 72 |
| Colombia | 426 | 17 |
| Chinese Empire | 100,800 | 3,387 |
| Hongkong | 185,153 | 7,452 |
| Russia in Asia | 40,839 | 2,369 |
| Turkey in Asia | 9,000 | 786 |
| Australia, Tasmania | 24,640 | 812 |
| New Zealand | 7,787 | 351 |
| Total | 20,497,695 | $1,543,267 |
| Total, 1907-08 | 16,331,035 | $1,496,822 |
| Total, 1906-07 | 29,335,193 | 2,608,987 |
| Total, 1905-06 | 24,756,486 | 1,721,678 |
| Total, 1904-05 | 15,575,214 | 953,439 |

### II.—Quantity and Value of Exports, by Countries.

| To— | Pounds. | Value. |
|---|---|---|
| Belgium | 49,494 | $5,635 |
| France | 398,532 | 43,103 |
| Germany | 327,470 | 49,178 |
| Italy | 127,433 | 10,710 |
| Netherlands | 171,189 | 17,126 |
| Norway | 11,406 | 1,140 |
| Spain | 27,000 | 2,700 |
| Sweden | 26,192 | 2,621 |
| United Kingdom | 1,633,209 | 164,649 |
| Canada | 1,283,615 | 104,186 |
| Mexico | 49 | 4 |
| Japan | 16,206 | 1,845 |
| Total | 4,071,795 | $402,897 |
| Total, 1907-08 | 4,255,789 | $449,727 |
| Total, 1906-07 | 4,756,621 | 548,695 |
| Total, 1905-06 | *a* | 339,507 |
| Total, 1904-05 | *a* | 204,945 |

*a*—Not officially reported.

### III.—Quantity and Value of Exports, by Customs Districts.

| FROM— | Pounds. | Value. |
|---|---|---|
| Bangor, Me. | 2,231 | $56 |
| Boston and Charlestown | 190,885 | 29,476 |
| New York | 2,380,444 | 254,799 |
| Philadelphia | 212,108 | 13,739 |
| San Francisco, Cal. | 4,743 | 697 |
| Buffalo Creek, N. Y. | 158,697 | 8,888 |
| Champlain, N. Y. | 148,060 | 10,818 |
| Detroit, Mich. | 103,619 | 7,731 |
| Huron, Mich. | 598,498 | 50,715 |
| Memphremagog, Vt. | 227,924 | 22,266 |
| Niagara, N. Y. | 22,389 | 1,865 |
| Vermont, Vt. | 22,197 | 1,847 |
| Total | 4,071,795 | $402,897 |

## RECLAIMED RUBBER.

### I.—Quality and Value of Exports, by Countries.

| To— | Pounds. | Value. |
|---|---|---|
| Belgium | 80,947 | $12,900 |
| France | 326,245 | 38,030 |
| Germany | 87,811 | 13,803 |
| Italy | 225,591 | 25,736 |
| Netherlands | 36,140 | 5,625 |
| United Kingdom | 907,310 | 108,871 |
| Canada | 1,433,547 | 196,363 |
| Japan | 98,960 | 13,533 |
| Total | 3,196,551 | $414,861 |
| Total, 1907-08 | 2,947,974 | $418,738 |
| Total, 1906-07 | 4,550,788 | 665,109 |
| Total, 1905-06 | 4,084,696 | 511,843 |
| Total, 1904-05 | *a* | 522,902 |

*a* Not officially reported.

### II.—Quality and Value of Exports, by Customs Districts.

| FROM— | Pounds. | Value. |
|---|---|---|
| Boston and Charlestown | 85,795 | $12,600 |
| New York | 690,693 | 82,897 |
| Philadelphia | 963,441 | 119,890 |
| Puget Sound, Wash. | 16,419 | 2,254 |
| San Francisco | 2,027 | 685 |
| Buffalo Creek, N. Y. | 328,232 | 48,177 |
| Champlain, N. Y. | 464,428 | 66,811 |
| Detroit, Mich. | 16,564 | 1,567 |
| Huron, Mich. | 91,252 | 8,582 |
| Memphremagog, Vt. | 15,506 | 2,899 |
| Niagara, N. Y. | 505,145 | 66,905 |
| Vermont, Vt. | 14,949 | 1,594 |
| Total | 3,196,551 | $414,861 |

## EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1908.

| EXPORTED TO— | Belting, Packing, and Hose. | Boots and Shoes. Pairs. | Boots and Shoes. Value. | Other Goods Value. | Total Value |
|---|---|---|---|---|---|
| EUROPE: | | | | | |
| Austria-Hungary | $4,450 | 11,254 | $5,520 | $13,544 | $23,514 |
| Azores, etc | 74 | 230 | 144 | 542 | 760 |
| Belgium | 6,930 | 128,598 | 56,904 | 74,465 | 138,299 |
| Bulgaria | ..... | 9 | 5 | ..... | 5 |
| Denmark | 12,947 | 34,233 | 15,945 | 21,334 | 50,226 |
| France | 20,010 | 82,876 | 39,698 | 148,662 | 208,370 |
| Germany | 32,272 | 261,973 | 138,159 | 384,074 | 554,505 |
| Gibraltar | ..... | 280 | 179 | ..... | 179 |
| Greece | ..... | 150 | 81 | 100 | 181 |
| Italy | 1,691 | 76,484 | 47,449 | 53,236 | 102,376 |
| Netherlands | 2,387 | 984 | 463 | 95,757 | 98,607 |
| Norway | 4,592 | 29,744 | 14,956 | 2,656 | 22,204 |
| Portugal | 869 | 1,070 | 506 | 2,421 | 3,796 |
| Roumania | ..... | 9 | 5 | ..... | 5 |
| Russia in Europe | 1,133 | 1,676 | 997 | 20,034 | 22,164 |
| Spain | 1,327 | 56,819 | 30,685 | 8,229 | 40,241 |
| Sweden | 1,240 | 32,966 | 17,767 | 3,980 | 22,987 |
| Switzerland | 1,914 | 60,481 | 31,744 | 23,147 | 56,805 |
| Turkey in Europe | ..... | 221,030 | 109,080 | 170 | 109,250 |
| United Kingdom | 153,579 | 742,543 | 338,105 | 1,270,046 | 1,761,730 |
| Total, Europe | $245,415 | 1,743,409 | $848,392 | $2,122,397 | $3,216,204 |
| NORTH AMERICA: | | | | | |
| Bermuda | $1,008 | 353 | $184 | $2,084 | $3,276 |
| British Honduras | 499 | 220 | 314 | 173 | 986 |
| Canada | 182,052 | 46,695 | 64,787 | 707,058 | 953,897 |
| Newfoundland | 4,608 | 46,521 | 31,283 | 2,485 | 38,376 |
| Costa Rica | 8,560 | 322 | 177 | 7,157 | 15,894 |
| Guatemala | 6,990 | 18 | 54 | 1,672 | 8,716 |
| Honduras | 3,057 | ..... | ..... | 873 | 3,930 |
| Nicaragua | 4,933 | 24 | 12 | 2,865 | 7,810 |
| Panama | 149,006 | 1,355 | 1,239 | 46,787 | 197,032 |
| Salvador | 6,692 | ..... | ..... | 6,439 | 13,131 |
| Mexico | 295,141 | 2,859 | 2,616 | 188,551 | 486,308 |
| West Indies, British | 8,292 | 480 | 402 | 13,652 | 22,346 |
| Cuba | 81,108 | 1,870 | 2,386 | 208,645 | 292,139 |
| Danish | 510 | 44 | 23 | 292 | 825 |
| Dutch | 268 | 24 | 14 | 342 | 624 |
| French | ..... | ..... | ..... | 76 | 76 |
| Haiti | 674 | 75 | 123 | 479 | 1,276 |
| Santo Domingo | 1,794 | 1,357 | 677 | 3,236 | 5,707 |
| Total, North America | $755,192 | 102,217 | $104,291 | $1,192,866 | $2,052,349 |
| SOUTH AMERICA: | | | | | |
| Argentina | $24,287 | 47,871 | $25,506 | $45,126 | $94,919 |
| Bolivia | 2,452 | ..... | ..... | 738 | 3,186 |
| Brazil | 25,310 | 41,599 | 23,746 | 35,406 | 84,462 |
| Chile | 11,313 | 641 | 804 | 17,558 | 29,675 |
| Colombia | 4,901 | 1,117 | 641 | 5,720 | 11,262 |
| Ecuador | 8,435 | 1,184 | 554 | 3,478 | 12,467 |
| Guiana—British | 1,742 | 2,888 | 1,351 | 1,766 | 4,859 |
| Dutch | ..... | ..... | ..... | 498 | 498 |
| Paraguay | ..... | ..... | ..... | 103 | 103 |
| Peru | 12,567 | 804 | 403 | 6,717 | 19,687 |
| Uruguay | 730 | 10,379 | 6,106 | 12,799 | 19,635 |
| Venezuela | 2,132 | 60 | 35 | 7,054 | 9,221 |
| Total, South America | $93,869 | 106,543 | $59,146 | $136,959 | $289,974 |
| ASIA: | | | | | |
| Chinese Empire | $10,172 | 386 | $461 | $6,455 | $17,088 |
| British India | 15,026 | 1,081 | 816 | 6,771 | 22,615 |
| Straits Settlements | 578 | ..... | ..... | 2,801 | 3,379 |
| Other British | ..... | 72 | 21 | ..... | 21 |
| Dutch East Indies | ..... | ..... | ..... | 702 | 702 |
| Hongkong | 2,398 | 14,751 | 4,951 | 3,198 | 10,538 |
| Japan | 29,139 | 86,648 | 67,358 | 115,715 | 212,212 |
| Korea | 1,739 | 169 | 115 | 316 | 2,170 |
| Russia, Asiatic | 156 | 37 | 234 | 643 | 1,033 |
| Siam | 76 | ..... | ..... | 115 | 191 |
| Turkey in Asia | ..... | 28,066 | 14,116 | 98 | 14,214 |
| Total, Asia | $59,275 | 131,210 | $88,072 | $136,814 | $284,161 |
| OCEANIA: | | | | | |
| Australia and Tasmania | $88,220 | 241,920 | $126,071 | $76,465 | $290,756 |
| New Zealand | 9,951 | 50,287 | 46,379 | 43,892 | 100,222 |
| Other British | ..... | ..... | ..... | 136 | 136 |
| French Oceania | 247 | 3,042 | 2,637 | 1,475 | 4,359 |
| German Oceania | ..... | ..... | ..... | 553 | 553 |
| Philippine Islands | 39,691 | 2,997 | 2,204 | 73,652 | 115,547 |
| Total, Oceania | $138,109 | 298,246 | $177,291 | $196,173 | $511,573 |
| AFRICA: | | | | | |
| British, West | $632 | ..... | ..... | $288 | $920 |
| British, South | 55,547 | 12,354 | $13,416 | 17,023 | 85,986 |
| British, East | 754 | ..... | ..... | 650 | 1,404 |
| French Africa | 2,426 | ..... | ..... | 397 | 2,823 |
| Liberia | ..... | 19 | 26 | 11 | 37 |
| Portuguese Africa | 146,799 | 1,243 | 913 | 20,201 | 169,913 |
| Egypt | 427 | 1,194 | 1,126 | 177 | 1,730 |
| Total, Africa | $206,585 | 14,810 | $15,481 | $38,747 | $260,813 |
| GRAND TOTAL | $1,498,445 | 2,396,435 | $1,292,673 | $3,823,956 | $6,615,074 |
| Grand Total, 1907-08 | $1,347,775 | 3,080,253 | $1,614,290 | $3,743,040 | $6,705,105 |
| Grand Total, 1906-07 | 1,253,369 | 2,310,420 | 1,231,898 | 3,729,643 | 6,214,910 |
| Grand Total, 1905-06 | 1,221,159 | 2,693,690 | 1,505,082 | 2,966,144 | 5,692,385 |
| Grand Total, 1904-05 | 994,100 | 2,390,539 | 1,214,342 | 2,572,375 | 4,780,817 |
| Grand Total, 1903-04 | 880,010 | 2,310,808 | 1,086,364 | 2,469,750 | 4,436,124 |
| Grand Total, 1902-03 | 819,985 | 2,307,401 | 1,056,491 | 2,299,875 | 4,176,351 |
| Grand Total, 1901-02 | 634,146 | 2,594,708 | 1,046,315 | 1,781,941 | 3,462,402 |
| Grand Total, 1900-01 | 565,726 | 1,459,100 | 724,015 | 1,727,527 | 3,017,268 |

A CEYLON newspaper prints a letter from an old subscriber, asking "if it is possible for a well grown Ceará rubber tree, 6 years old, to yield 80 pounds of rubber per annum." Such figures probably were suggested to his mind by some rubber plantation prospectus, and if the whole document was similarly optimistic it doubtless would make mighty good reading.

THE visiting agents for rubber estates in the Federated Malay States have had a profitable experience. One is mentioned in *The Times of Ceylon* as having made £4,000 this year by reports upon properties.

# Growth of a Rubber Library.

THE development of the india-rubber and allied industries during the past 20 years is notably illustrated by the extent of the literature which has come into existence regarding them. At the date of the establishment of THE INDIA RUBBER WORLD there were few books in any language devoted solely or chiefly to any branch of the rubber interest.

For English readers the chief books in this field were those of Goodyear, in America, and Hancock in Great Britain, regarding their work in connection with the rubber industry. But these were not only out of print but had become very inadequate as an exposition of the scope of the rubber interest as a whole. One who desired to be informed in regard to the nature of rubber, its sources, and its applications was obliged to search through libraries, where one might chance to fall upon a paper of value hidden away in a volume of scientific transactions, or in a public document, a book of travel, or something of the kind.

But there were few if any libraries, twenty years ago, in which pains was taken to catalogue such scattered papers, and the search under such circumstances was not one to promise results of value. It was useless to go to a bookseller for anything in print on rubber, and the manufacturer or rubber worker who desired to inform himself fully in regard to the business in which he was engaged had to depend upon oral information rather than printed books.

Twenty years ago the rubber industry was largely in the hands of what might be termed one-man companies, where the head of the establishment was expected to know the whole scope of the business so far as his own particular company was concerned, and those with which it came into competition, without much regard to whether there were rubber factories in other lands, and with little thought to where the raw material originated or under what conditions.

The fact that rubber factory secrets were still so sedulously guarded had no slight effect in discouraging the writing of books or papers on rubber, and will help to explain the paucity of rubber literature up to the past two decades. While what has been written here relates more particularly to the United States and England, the condition was practically the same in France and Germany, the other leading rubber manufacturing countries of the time.

The illustration on this page of a corner in THE INDIA RUBBER WORLD library will serve to indicate how conditions have changed. Just as the Editor's desk, absolutely bare on the first opening of the office, is now crowned with a row of twenty bulky—and we may say handsome—bound volumes showing the production of the paper continuously for as many years, the neighboring and surrounding shelves are filled with books relating to rubber which have come into existence in the meanwhile. There are books written by manufacturers, books written by chemists and other experts, books written for rubber planters, and so on.

There are books which relate only in part to rubber, such as general works on chemistry or books relating to certain materials applicable to rubber compounding; there are books which each contemplate a comprehensive treatment of the rubber industry; and others devoted to a single branch such as tires, dental work, or even rubber stamps. The richness of the special literature which has come into existence is such that no man whose business touches upon any of the lines which have here been referred to can fail to find in printed pages helpful information or suggestions emanating from recognized authorities.

It is not intended here to present any catalogue of rubber books—much less a complete bibliography of rubber—but to mention for purposes of illustration only a few titles. As the new books have come from the press earlier productions out of print have been picked up from time to time, so that the library goes back to 1745, in which year in the "Histoire de L'Academie Royale des Sciences," La Condamine reported his discovery up the Amazon of the *resine elastique*, or *"Cahoutchou,"* believed to be the first published scientific reference to what the world has come to know as india-rubber. This volume is in our library, as well as later volumes in the same series, including that for 1751, in which appears a fuller report by La Condamine, together with plates of the tree, for which the spelling had now been changed to "caoutchouc" in French with a different spelling for Spanish.

The crude rubber situation is better comprehended with the aid of the collection of books which has grown up regarding the opening to the world's knowledge the various

"THE INDIA RUBBER WORLD" LIBRARY.
[Mr. Pearson's desk at the left. Cabinet of rubber specimens, compounding materials, substitutes, and the like, partially shown on the right.]

countries which yield rubber, including the greater part of tropical Africa. There are rows of volumes relating to the "dark continent" alone, as well as South America, Central America, and Mexico. The rubber planting interest which practically was non-existent twenty years ago has latterly given rise to a vast amount of printed matter, theoretical or practical, including not only treatises but a vast amount of material in the shape of company reports, which, taken as a whole, embody much that is of interest and value.

Not the least interesting feature of the rubber library is the collection of reports of rubber patent litigation. There are, for instance, nine bound volumes of "Charles Goodyear v. Horace H. Day," dating back to 1852, followed by the other cases wherein Goodyear was a litigant, and coming down to the latest decisions in tire patent cases. A valuable part of the library is the complete set of files of all the india-rubber periodicals in any language, beginning with the pioneer of them all, *The Rubber Era*, of New York, started in September, 1880. There are also files of other periodicals having a relation more or less to rubber, or to planting, or to countries which yield rubber.

Then there are patent specifications, information regarding tariffs, trade directories, consular reports, and statistics of commerce, particularly of india-rubber—and collections of maps of photographs, all making THE INDIA RUBBER WORLD'S collection of books a most valuable working library.

The value of trade catalogues as giving an idea of the state of the rubber industry in any country at any time has always been recognized in THE INDIA RUBBER WORLD, and such publications have been collected systematically since the paper had its beginning. These catalogues are arranged in readiness for constant use.

# The Rubber Trade at Akron, Ohio.

*By a Resident Correspondent.*

### RECORD OF THE YEAR'S PROGRESS.

WHILE the year 1908 was notable for the awakening of rubber manufacturers to the importance of the automobile tire field, and the consequent construction of numerous factory additions, the year just closed has seen not only a continued growth in the demand for tires, but a steady increase in all other lines of rubber goods, especially mechanicals.

Besides adding to their manufacturing facilities, Akron rubber companies have been constantly increasing the strength of their selling forces. New territory in the west and south have been invaded with the establishment of branch offices and selling agencies, the object of which is not only to seek the business already existing but to prepare for the trade of years to come.

The past twelve months have seen the largest year's development in the history of the B. F. Goodrich company. With their unexcelled department organization they have been quietly and steadily advancing by long strides. As an exterior indication of the company's growth most important is the replacement of the main buildings of the old factory with three new fireproof structures, six stories high. Soon after the new year these buildings will be ready for occupancy and the company will be enabled to double and treble the capacity of the plant in proportion to the ground area occupied. Purchases of real estate have increased the property to 24 acres and the number of employés has been increased since January 1, 1909, from 4,200 to 5,000.

The Diamond Rubber Co., by the statement of one of their officials, have increased their output more than 25 per cent. and their floor area 35 per cent. during 1909. The number of employés on the pay roll has reached 4,500, including a large construction force. Two important events in the year's chronicle of The Diamond Rubber Co. have been the addition of a boot and shoe department and the issue of a 100 per cent. stock dividend at the October annual meeting, increasing the capital stock to $10,000,000.

The year has been important for The Goodyear Tire and Rubber Co. by reason of the development of their tire making machine, which, to quote Mr. G. M. Stadelman, secretary of the company, will enable the company to increase their 1910 output by 200 per cent., without making a proportionate increase in floor space. The number of men employed has been increased to 1,200, the floor space increased 71,000 square feet, and additions planned which will afford 210,000 additional square feet by April 1.

The rapid growth of The Firestone Tire and Rubber Co. is evidenced by the recent decision of the directors to abandon the present plant and build an entirely new factory, nearer to the outskirts of the city, on land already purchased. Mr. H. S. Firestone, president of the company, states that $500,000 will be invested in new buildings on the newly acquired site.

The year's history of The Swinehart Clincher Tire and Rubber Co. marks some important changes in the organization and breadth of manufacture and sales. Though they have been engaged for six years in making solid tires exclusively, pneumatic tires have now been added to the list of products. During the latter part of the year the floor space has been increased 50,000 square feet in the factory, and by greatly strengthening their selling force, the company are advancing into a much wider field of trade than they have sought heretofore.

The Buckeye Rubber Co. suffered two disastrous fires on August 12 and 14, which resulted in the loss of $100,000 worth of property. Since that time, however, the damaged building, formerly a story and a half high, has been rebuilt three stories high of fireproof material. Work has also been started on a new fireproof building affording 15,000 square feet of space and enabling the company to supply the increased demand for their pneumatic tires, marketed by The Consolidated Rubber Tire Co.

The Miller Rubber Co. during the year past have met with such success that they have determined to add tires to the product of the plant. For this purpose a large brick factory is being put up. Jacob Pfeiffer and W. F. Pfeiffer are respectively president and manager of the company.

The Star Rubber Co. since last spring have been making pneumatic tires of the clincher and quick detachable type. Experiments with these have warranted the company in starting the addition of a new factory building, to house a mill room and engine room for the purpose of increasing the output of tires. The capital stock of the company has been increased from $100,000 to $250,000.

The past year has carried the Stein Double Cushion Tire Co., already prominent in the solid tire trade, into the manufacture of the patented "Stein Lap Lock" pneumatic automobile tire. The factory is now making more than 40 of these tires a day at the present time, and new machinery is now being installed so that the output may be doubled in thirty days. The death of Jacob Neuman, vice-president and general manager of the company, last March, brought J. Haber, of Cleveland, into the company in the same position.

During 1909 the Motz Clincher Tire and Rubber Co. have added to their output an auto buggy tire and a truck tire with a quick detachable rim. Contracts for 1910, which will call for 1,000 sets of tires, have been made with the Rausch Lang Carriage Co., of Cleveland, the Kenmore Manufacturing Co., of Chicago, the Waverley Co., of Indianapolis, the Auto-Engineering Co., of Detroit, and others.

The present year has seen the birth of the Falls Rubber Co., at Cuyahoga Falls, Ohio. Their plant is now in operation, making rubber molded and dipped goods, as well as automobile and bicycle tires.

### GOODYEAR TIRE AND RUBBER ANNUAL.

THE annual meeting of The Goodyear Tire and Rubber Co. was held in their Akron offices on December 6. The following officers were elected: F. A. Seiberling, president and general manager; Charles W. Seiberling, vice-president; G. M. Stadelman, secretary; Frank H. Adams, treasurer; and P. W. Litchfield, superintendent. A new office was created, that of assistant treasurer, to which W. E. Palmer was elected. The board of directors chosen at the shareholders' meeting is composed of F. A. Seiberling, Charles W. Seiberling, G. M. Stadelman, P. W. Litchfield, Frank H. Adams, James P. Loomis and Henry B. Manton.

The Goodyear Tire and Rubber Co. were successful in obtaining from the city council an order vacating Prune street, a highway running through the company's property, and the improvements announced in the last number of THE INDIA RUBBER WORLD are to be carried on without delay. The condition imposed by the council was the payment of $1,500 by the company. This was agreed to. The Goodyear company have secured the rights to the manufacture in America of the Doolittle detachable demountable rim. It will be known as the "Goodyear-Doolittle" detachable demountable. The advantages claimed for it are its lightness and the ease with which it may be detached. It will be manufactured in the Akron factory of the company.

### GOODRICH COMPANY AFFAIRS.

THE B. F. Goodrich Co. have made arrangements to buy from the State of Ohio a strip of land in the rear of their plant, along the Ohio canal and extending north to Exchange street. It has been appraised at $20,000. It will afford considerable additional room for expansion of the plant. To replace the land the State has bought a piece from the property of the Adamson Machine Co. across the canal. The latter company expect to move into their new plant in the east end of the city, on Carroll street in February. They are engaged largely in the manufacture of rubber working machinery.

The inside of a rubber factory was deemed sufficiently interesting by picture film makers to make it the subject of a film recently issued. Moving pictures of workmen in The B. F. Goodrich Co.'s factory were taken early in December, one showing the process of making a golf ball from start to finish.

### PERSONAL MENTION.

MR. FRANK A. SEIBERLING, president of the Goodyear Tire and Rubber Co., was elected president of the Garfield Republican Club of the old Nineteenth Congressional district, at its annual meeting early in December. The club is one of the principal political organizations of Ohio. Mr. Seiberling was not chosen on account of his political activities, but through a desire of the members to honor a manufacturer of Akron.

Mr. A. H. Noah, treasurer of The Diamond Rubber Co., added eight acres to his estate on Portage path recently by the purchase of a part of an adjoining farm for $29,000. Mr. Noah's home is now under construction. When it is completed he will have one of the most beautiful country estates about the city.

During the past month Mr. Harry W. Tew, of Jamestown, New York, visited Akron, staying with his son, Mr. James D. Tew, of The Diamond Rubber Co. Mr. Tew was associated with the late Dr. B. F. Goodrich in the establishment of the first rubber factory in the city, in 1869. He continued nine years in that company and then left to enter the oil business, to which he devoted the rest of his business career. Mr. Tew is now seventy-eight years old. While in Akron he went through the Diamond and Goodrich factories.

### THE CITY OF AKRON.

IT will be good news to those who visit Akron to hear that the project to build a new $350,000 hotel here has met with success. During the last month the Akron Hotel Co. have completed the subscription of the necessary amount of stock, have purchased the property on which stands the old Empire Hotel and are ready to let a contract for a seven story building to John Gill & Sons, of Cleveland. The hotel will be leased for thirty years to a syndicate which controls a chain of hotels in New York cities. It will be named "The Portage," after the historic portage trail west of the city which at one time marked the western boundary of the United States.

Akron was the only American rubber manufacturing town mentioned in the recent quarter-centennial number of *The India Rubber Journal*, of London. A short description of the city is given, accompanied by a photograph taken on one of the main streets.

### BREVITIES.

A SMALL mill for the manufacture of dipped rubber goods was recently started at Barberton, Ohio, by the Red Cross Rubber Co. Melvin Swisher is managing the business.

The Swinehart Tire and Rubber Co. have secured for their sales department the services of Mr. Frank R. Talbot, formerly in charge of the Los Angeles branch of the Firestone Tire and Rubber Co.

Mr. R. G. Treitler, formerly chief clerk in the Boston office of The Diamond Rubber Co., has taken a position with The Goodyear Tire and Rubber Co. in Akron.

# The Rubber Trade at Trenton, New Jersey.

*By a Resident Correspondent.*

TRENTON rubber manufacturers interviewed for THE INDIA RUBBER WORLD predict an unusually good condition of the rubber industry for 1910. Their general statement is that, considering the depression of 1907-08, the past year has been a fair one. But through the fall there has been generally a decided growth of business all over the country, and already the rubber industry is responding to the rising tide of trade.

A. Boyd Cornell, of the Empire Rubber Manufacturing Co. and the Empire Tire Co., states that his concerns believe the new year will be an exceptionally good one for the rubber business. He says the tire business is pretty certain to be good, and the mechanical line also will doubtless show up exceedingly well. Western buyers seem very anxious to get their orders in and filled; a very healthy improvement in trade is also manifesting itself in the East.

John S. Broughton, secretary and treasurer of the United and Globe Rubber Manufacturing Cos., is very confident that 1910 will bring good business to rubber goods makers. Considering everything, including the financial slump, the past year has been a fair one. The railroads are economizing less, and are planning for big business. The general outlook is for very encouraging trade for the coming twelve months.

Officials of the Whitehead Brothers Rubber Manufacturing Co. think trade conditions look good for the new season. They have just closed a year that was all they could expect in view of the commercial depression. During the year they have installed a new type of machine for weaving cotton hose.

Harry L. Boyer, general manager of the Joseph Stokes Rubber Co., is looking forward to a season of trade as good as any they ever had. He says the prospects are exceptionally bright

in their branch, which is hard rubber goods. They have added a new line the past season, the making of hard rubber parts of automobiles, and it is proving successful. The outlook in this line, Mr. Boyer says, is very good, as there is every indication that the automobile business will see a pronounced boom.

J. Russell Kelso, manager of the Woven Steel Hose and Rubber Co., joins in the general opinion that 1910 will bring big business to the rubber mills. He says the railroads and big contractors all over the country are planning to extend their business, with the result that orders are already coming in and there is every promise of increased trade. Mr. Kelso says the demand for armored hose, which is one of the main lines of this company, is increasing. The company has added a complete line of packings in which the business has been quite successful, and the prospects for this are also bright.

Horace M. Royal, secretary of the Home Rubber Co., said when interviewed: "In so far as we are concerned the trade outlook for 1910 is very promising. Orders are coming in well for the first six months of the year, and our salesmen are writing letters which are encouraging as to the prospects for the entire year."

"The rubber business certainly is improving," declared Harry E. Evans, manager of the Consolidated Rubber Co. "We are looking for a better season during 1910 than we have had for several years." Mr. Evans had just returned from an extended trip through the west and northwest, and he said he had found trade conditions in excellent shape. He said that on the Pacific coast the railroads were finding it almost impossible to handle the traffic.

Wilson H. Harding, president of the Union Rubber Co., also thought the trade outlook good. His company handles the products of the Trenton Oilcloth and Linoleum Works, owned largely by the Cooks of the Hamilton and Acme Rubber companies, and its business in this line has outstripped that of the rubber goods.

William L. Blodgett, secretary of the Hamilton Rubber Manufacturing Co., says his concern has all the business it can handle, and the outlook is for a very busy year. They have completed several improvements to their factory during the year.

General C. Edward Murray had just returned from a two weeks' hunting trip in North Carolina when he was asked for an opinion as to the trade outlook for 1910. He replied: "We are looking for more business than we will know how to handle." Then he outlined how preparations are being made to care for increased trade. He said the Empire Rubber Manufacturing Co. contemplate doubling the capacity of their mill room; while the Crescent Insulated Wire and Cable Co. have placed an order for 300 additional spindles. This concern and the plant of the Crescent Belting and Packing Co. are being operated until 10 o'clock each evening. General Murray is one of the heads of the three companies. Incidentally he said he had a fine hunting trip.

"Trade for 1910 looks very encouraging to us," declared John A. Lambert, secretary of the Acme Rubber Manufacturing Co. He said the high price of crude rubber would cut into the profits, but notwithstanding that the business outlook was good.

### JAR RING PATENT CASE DECIDED.

JUDGE JOSEPH CROSS filed in the United States circuit court at Trenton December 18 an opinion deciding in favor of the Empire Rubber Manufacturing Co. in the two suits brought against it by William P. Coldren on the charge of infringements of patents for the manufacture of lipped rubber fruit jar sealing-rings. Judge Cross dismissed both suits with costs on the complainant. He held that both patents were invalid because they did not embody any new principle. The patents were No. 738,295 (September 3, 1903,) for the apparatus for making the rings, and No. 738,885 (September 15, 1903,) for the process of the manufacture.

The two suits were heard and decided together. Judge Cross, discussing the first patent, said that it involved no more invention than if a person having a machine in which was inserted a die for stamping square pieces from steel metal should substitute a round die for the square one. The judge quoted from the defendant's expert:

"The prior patented art shows that the Coldren machine was old and well known except, possibly for the particular form of his die---the form of ring produced by this machine was common property many years before Coldren entered the field; ---it was a common expedient to make packing rings for any desired purpose by cutting the same from lengths of tubing.--- Reduced to its lowest terms, it would appear that the Coldren invention, as far as the machine patent is concerned, resides solely in the form of the die to produce a rib or projection longitudinally of and on the side of the tube."

The expert then proceeded to show that tubing with longitudinal projections or flutings had been produced many times before.

Taking up the other patent—for the lipped ring itself—Judge Cross decided: "There was nothing new in the described process. Sealing rings and like articles were always formed by first taking a piece of tubing and then cutting it cross sectionally into lengths to form rings. The process is essentially the same whatever the shape or configuration of the tubing from which the rings are cut. Tubes of various forms and shapes were old in the plastic art, and so, too, was the method of cutting them into rings for use. The complainant's patent disclosed nothing new in the art, and is invalid."

### RUBBER MEN IN PUBLIC OFFICE.

MR. WILLIAM J. B. STOKES, president of the Home Rubber Co., treasurer of the Thermoid Rubber Co., and an officer of the Joseph Stokes Rubber Co., retires as treasurer of the City of Trenton on January 1, after having held the office continuously since June 1, 1894, or 15 years and 6 months. No other treasurer of the city ever held the office so long. Mr. Stokes was born in 1856 and is the son of Joseph Stokes, for many years superintendent of the plant of the New Jersey Steel and Iron Co., at Trenton, founded by Cooper, Hewitt & Co., of New York. Not only has Mr. Stokes been one of the leaders in building up the Trenton rubber industry but he has also had an important part in the municipal progress. From 1886 to 1891 he was a member of the common council of the city, and during the six years took an active part in the direction of city affairs. During the time Mr. Stokes was city treasurer about $25,000,000 in city funds passed through his hands, besides which he attended to many other fiscal duties of the municipality.

It is very likely that for the next three years another rubber man will hold the office of city treasurer, as Harry E. Evans, manager of the Consolidated Rubber Co. and a director in the Empire Rubber Manufacturing Co., is the choice of the Republicans to succeed Mr. Stokes. The city administration will remain in the hands of the Republicans in 1910 and so Mr. Evans will undoubtedly be elected by common council. Mr. Evans was born in New Brighton, Pennsylvania, but has resided in Trenton 25 years. For the past 7½ years he has been manager of the Consolidated Rubber Co. Mr. Evans is a member of the board of park commissionhers of Trenton, but will resign that place to take the treasurership. He is president of the National Union in the United States.

### THE ACME COMPANY MAKE ADDITIONS.

THE Acme Rubber Manufacturing Co. have just completed an addition to their plant, and are equipping it with machinery. Additional machinery is also being placed in the other departments, about $30,000 worth having been ordered. The addition is a substantial brick structure 250 x 55 feet, three stories high. About one-half of the new floor space will be devoted to their tire line, which is greatly increasing with this concern. The balance of the new mill will be used for needed expansions in other departments. When the new wing is in operation the company

will have a capacity for making from 500 to 600 tires a day, besides about 800 inner tubes. The company have increased the capacity of the carriage cloth department also. Secretary John H. Lambert states that next spring another addition to the main building 75 x 80 feet, three stories high, will be erected. This will make the main building of the plant 650 feet long.

#### A BURNED FACTORY REBUILT.

THE Elwell Rubber Rubber Manufacturing Co., whose mill was badly damaged by fire December 7, has practically completed repairs and the business is under way again. The upper floor was completely burned out, and it was necessary to erect an entirely new roof, besides considerable other work. R. T. Elwell, president of the company, states that the shutdown caused by the fire lasted only a few days. The fire was the third in the mill within a few weeks, the other two not being serious. It is believed all were caused by friction of the machinery.

The Textile Rubber Co., composed of Brooklyn manufacturers, conducted on the top floor the business of rubberizing silk for ladies' storm coats and other purposes, and following the fire this business was removed to Brooklyn. It is likely that the Elwell company will later occupy the entire building. They manufacture "Panther tread" rubber heels and other molded goods.

# The Rubber Trade at San Francisco.

*By a Resident Correspondent.*

THIS is the most quiet time of the year for those who are depending on the rubber trade, as the holiday season has practically stopped all active business. The traveling men are returning home, and as far as business changes are concerned, if there are any to be made, the promoters are putting off until after the first of the year before making any important moves. The threatened further increase in the price of rubber is a continued source of anxiety. This, however, they make the best of, and would welcome any way or means whereby they could profitably raise the price of goods accordingly, and still retain the business. The filling of back orders has kept the houses fairly busy this month, and if business picks up as good as most of them expect it to after the first of the year, the period of idleness will be brief. Most everybody expects to see a good business begin with the new year, and although they have been looking forward from season to season to big improvement for over two years and it has not come, yet they now prophesy with more determination than ever, and certainly everything is favorable to good times. The city has been completely rebuilt, everybody is permanently established, the worst of a long period of unsettled times has been passed through safely, there are no dissensions on the part of labor unions, and the country districts are in unusually prosperous condition.

* * *

THE Empire Tire and Rubber Co. have recently been incorporated and will have headquarters in Los Angeles, California.

Mr. C. H. Chase, manager of the Bowers Rubber Works, has been away on a trip to the northern cities. This firm have kept quite busy, and are turning out about the regular quota of stock from the factory at Black Diamond.

Ben Alexander has sold his interest in the Plant Rubber and Supply Co., located at 32 Beale street, and has now gone in with the Pacific Mill Mine and Supply Co., at No. 508 Mission street. Both of these firms state that the mechanical line is very quiet, although they are looking forward to a good increase of business during the coming spring.

* * *

A NEW enterprise will be launched after the first of the year under the supervision of Mr. U. R. Grant, well known in the rubber interest on the coast. Mr. Grant, together with A. B. Cochrane, backed by strong capital, have bought out the Young Sanitary Manufacturing Co., of San Francisco. After the first of the year they will commence manufacturing and begin the active work of the new concern with Mr. Grant as the practical man in charge. The concern which they have bought out is the firm which had control of the new invention of detachable sanitary seats for toilets. The principle of the invention is an adjustable seat of hard rubber, hollow so that it can be supplied with a disenfecting solution, and containing little ducts to carry and spread the fumes so that germs cannot exist on the seat. This article was first introduced to the market by the Phoenix Rubber Co., but Messrs. Cochrane and Grant were the successful bidders for the concern and its output, and the new firm will commence the manufacture on a large scale.

* * *

FRANK SARGEANT, manager of the Gorham Rubber Co., states that business was first class up to the time of the commencing of the holiday present buying season. His idea is, he says, that the trade has seen the worst of conditions, and that they will not see dull times again for many years to come. The outlook is very favorable. The heavy rains have made some nice business for the footwear and clothing departments.

Mr. William J. Gorham, of the Gorham Rubber Co., is now in Seattle, Washington, visiting the company's branch in that city. He will return to San Francisco next week.

* * *

THE Smith and Eccles Co., located on First street, near Mission, now are handling the "Victor" balata belting, which they find to be an easy seller to the trade.

The local rubber dealers' association have called a meeting to be held next week. The meeting is called to discuss trade matters generally, and there is nothing of particular interest before the association at present. The members hope soon to make some changes which will be beneficial to the trade at large.

Mr. Gregory, manager for the New York Belting and Packing Co., Limited, on First street, will return to this city from his trip some time next week. General business keeps up well considering that this is the time of the year when it is not expected that there will be any great amount of new business.

F. S. Winslow, who has charge of the Pacific Coast Rubber Co. on Mission street, states that the recent rains have done much during the past month to take business out of its quiet rut which the mechanical lines had fallen into. The country is in good shape for the rubber business, as there is heavy snow on the mountains and it is generally a heavy winter, so that there are many calls on the wholesale establishments. The retailers are only buying from hand to mouth so that they order in small and frequent quantities. Mr. Winslow believes that next year will result in better business than the trade has known for some time.

#### EARLY DAYS IN THE COAST RUBBER BUSINESS.

MR. RICHARD H. PEASE, the dignified, quiet, kindly and eminently successful head of the old-established house of the Goodyear Rubber Co., of San Francisco, is the oldest man in the rubber

business on the Pacific coast, and he is in charge of affairs now with that same degree of activity and efficiency which has been marked by his employees for many years past. He has gained a place of the highest respect and esteem in the rubber trade in San Francisco and the adjacent territory by his kindly treatment of all with whom he had to deal, particularly his employees. There are hardly any of the more mature rubber salesmen of this city that did not start with Mr. Pease, and all of them honor him highly. Mr. Pease came to San Francisco in 1869, and became connected with the Goodyear Rubber Co. which had been established here in 1865.

"The business then was comparatively very small," he said, "and we had a small store under the Continental Hotel, on Montgomery street. From here we moved under the Grand Hotel, on Market street, in 1873, having increased the space to a first floor and basement. Business had been flourishing all along, so that in 1876 they moved into their large building on Second and Market streets, 65 feet frontage and 155 feet deep, with six floors and basement, and here they remained until the big fire forced us to move until we could have our present building reconstructed on the same site. Business increased every year so that in 1893 we found it necessary to open a store in Portland, Oregon. This made it possible to handle the northern territory

RICHARD H. PEASE.

from Portland, and California and Arizona from San Francisco. Since that time the northern territory has developed wonderfully and San Francisco has long since ceased to be the chief distributing point for the entire west.

"When I first came here San Francisco was the distributing point for the entire Pacific coast, and goods for Seattle, Portland, or Los Angeles had to come here first, also goods for the Orient, and from here it was distributed by steamer to the various ports. Everything by rail came here. There was only one railroad, but the rates were so high that it paid much better to keep up the old system of shipping "around the Horn," and this was done for many years after the first railroad came through in 1869. Everything was carried on sailing vessels, which came along every week or two; some came by steamer via the Isthmus. Small lots of goods were kept on the way for a long time ahead and the ships acted in the capacity of storage houses too.

"In those days we had a fine business. In Nevada they were opening the Comstock mines. In opening the new mills rubber belting and large quantities of heavy boots and shoes and waterproof clothing were sold. Throughout California immense quantities of rubber boots were used where they were doing hydraulic mining. It was a thing unknown to sell a short boot then, and the very best quality of mining coats were bought everywhere. We had unusually large sales of miners' white coats. A much better quality of goods were being used here than in the east. The retailers bought liberally and in large quantities, and a firm then could do a much larger business then with one-tenth of the force than now, with the latter day competition and the high price of rubber. In 1869, 1870, and 1871 we sold everything in gold, and when we sent our gold drafts in to New York we at first got a premium for them of 60 per cent. above currency; gold was that much more valuable than currency at that time. As everything was in currency in the east and we settled in currency, it made us a nice side profit of 60 cents on the dollar. The amount of the premium gradually diminished after 1869.

"We do not have the easy money that came in those days under modern conditions, but by keeping abreast of the times with every modern facility for doing business in close competition we have always continued successful and find that our trade prospers just as it did in the days of old. We have all been compelled to do closer figuring than ever during the past two years, but the better times are already showing up, and next year will begin another era of prosperity."

## GOOD WORDS FROM AUSTRALIA.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I notice that you purpose making your January number a special one, commemorating the fact that twenty years have elapsed since the introduction of THE INDIA RUBBER WORLD. As one of the fast depleting number who constitute the original subscribers, permit me to congratulate you on the continued success of the journal, from both a literary and a trade standpoint.

I can distinctly recollect a visit which you paid to the office of the rubber company with which I was connected in Boston, in the summer of 1889. On that occasion you spoke of introducing a journal devoted to the interests of the rubber and electrical trades, believing that these industries had become so important that a trade journal was indispensable. In due course the paper appeared, and was favorably received by the rubber trade generally.

I have been a constant reader of THE INDIA RUBBER WORLD for the past twenty years, and have found it to be a source of valuable information on all matters relating to the rubber industry. I have on file in my office all the publications in the world devoted to the rubber trade; but I consider the information I obtain from THE INDIA RUBBER WORLD to be of more value to me than that contained in any other publication on the subject. With kind regards, Yours very truly,

JOHN KEARNS,
Factory Manager, Dunlop Rubber Co.

Melbourne, Australia, November 16, 1909.

## OBITUARY.

WILBUR SHERWOOD UNDERHILL, son of the late Caleb Fowler and Emily Sherwood Underhill, died at Yonkers, New York, on December 10, of heart disease. He was born July 5, 1852, at New Rochelle, educated in the Yonkers public schools and engaged in business in New York for a short time, after which he accepted a position in the factory of the Hodgman Rubber Co., where in the course of time he became assistant superintendent. He was much respected by the firm and the employees, and upon the completion of twenty-five years of connection with the factory was presented with a handsome silver cup, fittingly inscribed. Mr. Underhill resigned about two years since. He was a lover of music, and for thirty-three years was organist and choir master at St. John's Episcopal Church, Tuckahoe. On January 12, 1876, Mr. Underhill married Miss Jane Odell Dusenberry, who survives him. Mr. Underhill died at the residence of his father-in-law, Charles R. Dusenberry, of Yonkers.

# The Editor's Book Table.

AGRICULTURE IN THE TROPICS. AN ELEMENTARY TREATISE. By J. C. Willis, M. A., SC. D., director of the Royal Botanic Gardens, Ceylon; organizing vice-president Ceylon Agricultural Society; editor of *The Tropical Agriculturist*. [In the Cambridge Biological Series.] Cambridge: University Press. 1909. [Cloth. 8vo. Pp. XVIII. + 222. Price 7 shillings.]

NO attempt has been made by Dr. Willis to write a book for the practical man to use in connection with his field work. Whoever will may buy useful treatises on growing onions, or cocoanuts, or what not, and profit from intelligent use of them. But our author has confined himself rather to certain general principles underlying agriculture—something which neither the individual agriculturist nor people in general in the past have always recognized as having an existence. Almost from the beginning of the human race there has been tillage of some kind, necessity having impelled men to labor to tempt food products from the soil. Yet even today the remuneration of agricultural effort on the whole is limited vastly by the failure of those engaged in it to study means of lightening labor, or the value of coöperation in lessening costs.

Such considerations are foremost in this work by Dr. Willis, and particularly with regard to tropical agriculture, in which so many things are to be considered that differ from farming in New England, for example, or in any of the countries of Europe. Agriculture in the tropics involves the production of commodities which for the most part are not thought of in other climates, in connection with farm work, but rather as the wares of the grocer or chemist or the like—as coffee, tea, sugar, spices, quinine, opium, and so on.

The latest notable addition to the products of agriculture in the tropics is india-rubber, which up to twenty years ago was solely a forest product. It is the inclusion of india-rubber among the commodities discussed by Dr. Willis, and the important relation which this gentleman, in an official capacity, has sustained to the scientific culture of rubber, that leads to a review of his book in these pages. It is distinctly not a manual of rubber planting, nor a guide to that industry any more than to the production of rice or cocoanuts. But whatever tropical products may be demanded by the peoples of the temperate zones, the principles underlying their growth are the same, and in outlining these principles our author has conferred a service of very great value.

Under the American system, the tiller of the soil is its owner, and, as a rule, each farm is self-contained and self-sustaining, producing the chief part of the food required for the farmer's family, and in addition a specific crop for sale—grain, or cotton, or tobacco, or the like—the proceeds of which pay for clothing and the other wants of the family, including the means of education, besides the general sustenance and development of the farm establishment. This system extends over millions of square miles of territory, employing more than half the population of the United States, and giving rise to countless rural communities of intelligent and vigorous people, from whom are recruited the leaders of industry, commerce, finance, and the government. It would be disastrous to the world if the existing American agricultural system, with its salutary results, should disappear. But no such possibility is meant to be suggested here.

Agriculture in the tropics under the system just referred to, however, is out of the question. It is to be considered that the products discussed by Dr. Willis cannot be brought into existence outside the tropics. Also, that their production must always be the result of the labor of tropical peoples. A third point is that the direction of such enterprise on any scientific or economical basis, must be in the hands of other than tropical peoples. Being a native of England, our author naturally uses the word "Europeans" in referring to the leaders of modern tropical planting.

Not the least important feature of this book is its pointing out the difference between the results of native agriculture in the Far East and those attained by the employment of coolies under European direction. A parallel might be found in comparing the quality and cost of cloth as between the old time household employment of distaff and loom and the modern factory system. Or, again: What would be the cost of steel to-day, if every man who might need some were to produce it in leisure moments in his back yard, instead of buying it from such centralized mammoth establishments as the United States Steel Corporation, or Krupp's, in Germany?

This article is not based upon quotations from Dr. Willis, but is suggested by reading his book. We are interested in india-rubber, and to sum him up, this material is produced more economically by tropical labor, on a large scale, under European direction, than if this or that or the other coolie should be depended upon to bring to market now and then a few pounds derived from his undirected labor.

Dr. Willis, by the way, makes no suggestion as to any change of agricultural methods outside of the tropics. A study of his work, however, suggests that, ultimately, the world's dependence for wheat, for example, will not be upon the small individual producers in this or that or another country, but upon large concentrated enterprises, managed by boards of directors in financial centers represented on immense plantations by capable resident managers. Boards of directors today supply the world with steel and cotton and woolen goods; they are coming to supply the world with india-rubber; why not with wheat and whatever else the world requires that comes out of the soil? If this should prove an economical necessity it will come about, of course, but the American agricultural system—and what compares with it in other countries—may be depended upon to endure, just as it did when American housewives ceased to spin and weave and began to buy drygoods from the "department store."

VEHICLES OF THE AIR. A POPULAR EXPOSITION OF MODERN Aëronautics. With Working Drawings. By Victor Lougheed, member of the Aëronautic Society, former member of the Society of Automobile Engineers, former editor of *Motor*. - - - Chicago: The Reilly & Britton Co. [1909.] [Cloth. Large 8vo. Pp. 479 + plates. Price, $2.50.]

THE appearance of this book contemporaneously with the Twentieth Anniversary Number of THE INDIA RUBBER WORLD suggests the fact that, twenty years ago, nothing could have been printed in a trade paper in any country more apt to offend the intelligence of its readers than a reference to human flight as a practical proposition. THE INDIA RUBBER WORLD, though never inimical to the idea of what people nowadays call "automobiles," was eight years old before these new fangled machines were referred to in its pages as filling a place in practical life. Today one may order an aëroplane with the same assurance of having the order filled as if he should require an automobile, or a bootjack, or a dozen eggs.

What is more, whoever will, may employ a sky pilot to assist him in navigating the air in one of the new vehicles with safety. The fact is that the "vehicles of the air" have come to stay; manufacturers of them in America and in Europe advertise them as definitely as makers of sewing machines or watches advertise their products, and they are getting orders. At the second Paris Aëroneautical Salon, in October last, orders were booked for 110 monoplanes of a single make. The mere fact of the appearance of Mr. Lougheed's substantial volume is convincing that the flying machine interest has reached an important stage. And as this article is being written one happens to see in a leading

New York newspaper a half page report of a day's court proceedings in a case where a million dollar company—capital actual—are claiming damages for infringement of patents on an aëroplane. These things do not happen in regard to an invention without practical value.

Mr. Lougheed, our author, made an admirable record as editor of the important journal, *Motor*, and the thoroughness of the book before us indicates that he has studied the matter of monoplanes and biplanes, not to mention ornithopters and helicopters—and, of course, balloons—no less carefully than in the case of automobiles in earlier days. The book is actually up to date. There are 270 illustrations—many of them "half-tones" of exceptional merit—patent specifications, a glossary of aëronautical terms, and other interesting features in this book too numerous to recount in a journal interested in flying machines only in so far as rubber is used in their construction. Incidentally it may be stated that the rubber requirements for these new machines form by no means the least important item of cost.

HANDBOOK OF BRITISH GUIANA. 1909. COMPRISING GENERAL and Statistical Information Concerning the Colony. Edited and Compiled by George D. Bayley (of the British Guiana Civil Service). Published under the authority of the Permanent Exhibitions Committee. Georgetown: "The Argosy" Co., Limited. 1909. [Cloth. 8vo. Pp. xxv + 607 + plates. Price, 5 shillings.]

THE natural resources of British Guiana compare favorably with those of any other English-speaking colony in the world, and it is of interest to note the efforts now being made to promote their long delayed development. Not only are there great riches in the forests, and in the as yet little worked mines of the colony, but there are large areas fitted for tillage and grazing, the whole giving the colony great potential wealth. The book before us has been compiled under official auspices, with a view to educating the colonists themselves as to the country in which they live, and merchants, farmers and capitalists elsewhere as to the opportunities which British Guiana offers for investments. There is scarcely any character of information regarding the colony likely to be called for in any quarter which is not fully set forth in this handsome volume, the interest of which is greatly enhanced by nearly threescore excellent photogravures.

INDISCHE CULTUUR ALMANAK (MET SUPPLEMENT) VOOR 1910. Samengesteld A. H. Berkhout en M. Greshoff. 24e Jaargang, Amsterdam; J. H. De Bussy, 1909. [Cloth. 32mo. Pp. 372 + VII. Price, 3 florins.]

THE comprehensiveness and variety of the contents of this yearly handbook of Dutch planting interests in the East Indies indicate more thoroughly than does any other single publication the vast importance of these interests. There are statistics of sugar, coffee, tobacco, cacao, tea, spices, rice, quinine, kapok, cocoanuts, indigo, tapioca and other products. Attention is given also to india-rubber and gutta-percha, though the production of these to date under cultivation is as yet only beginning. There are tables of weights, measures, temperatures, prices, etc., of mutual interest to estates managers in Sumatra and Java and investors at home in the plantation enterprise. Professor Berkhout, one of the compilers, was the former conservator of forests in the Dutch East Indies, and Dr. Grehoff, the other, is director of the Colonial Museum at Haarlem. The supplement referred to (64 pages) is a list of books and periodicals relating mainly to planting interests.

HENDRICKS' COMMERCIAL REGISTER OF THE UNITED STATES. for Buyers and Sellers. Especially Devoted to the Interests of the Architectural, Mechanical, Engineering, Contracting, Electrical, Railroad, Iron, Steel, Hardware, Mining, Mill, Quarrying, Exporting and Kindred Industries - - - New York: Samuel E. Hendricks Co., No. 14 Lafayette street. 1909. [Cloth. Large 8vo. Pp. LXXVII + 1,220. Price $1.]

THIS is the eighteenth annual edition of a work which has proved its usefulness to a very great number of business men in a wide field. It embraces the names and addresses of over 350,000 manufacturing firms and individuals, under 35,774 business classifications, the mere listing of which, in the index, requires 77 four-column pages in small type. While not offered as a complete directory of any branch of industry, its lists under each general heading are sufficiently full to make the work one of value for reference, to which are to be added the advantage of its being accurate and brought up to date.

A MANUAL OF STEAM ENGINEERING, COMPRISING INSTRUCTIONS, Suggestions, and Illustrations for Progressive Steam Engineers Concerning the Application to Modern Daily Practice of the approved Theory of Steam Engineering. By W. H. Wakeman. - - - New York; New York Belting and Packing Co., Limited [1909.] [Cloth. 32mo. Pp. 409.]

THE author of this handy book has written extensively for steam engineers, and is an authority in his field. The present work has been prepared at the suggestion of a leading firm of rubber manufacturers, for distribution among their customers. It cannot fail to be of interest, not only to engineers as a book of reference, but also to those who have to do with the administration of industrial enterprises which make use of steam power.

DISEASES OF A GASOLINE AUTOMOBILE AND HOW TO CURE Them. A practical Book for the Gasoline Automobile Owner, Operator, Repair Man, Intending Purchaser, and Those Wishing to Learn the First Principles of an Automobile. Also for Launch Owners. - - - By A. L. Dyke and G. P. Dorris. [St. Louis. A. L. Dyke Automobile Supply Co. 1903.] [Cloth. 12mo. Pp. 201. Price $1.]

THIS is avowedly not a theoretical work, but one designed to answer briefly but clearly a series of practical questions concerning gasoline automobiles. As every such automobile calls for rubber tires, and as these have "diseases" as well as the other parts of a car, a chapter is devoted to the application of tires, caring for them, and making repairs when they are needed. This section of the work appears to be of a practical character, from which it may be assumed that the same is true of the remaining chapters.

THE TENSILE PROPERTIES OF INDIA-RUBBER. BY PHILIP Schidrowitz, PH.D., F.C.S., Member of British section International Testing Committee. [Reprinted from *The India-Rubber Journal*, March 22-May 31, 1909.] [Paper. 4to. Pp. 15.]

THIS paper is devoted to the desirability of standardizing india-rubber goods, together with suggestions toward physical tests for this purpose, by a physicist who has devoted much attention to this subject. Illustrations are given of some testing machines designed by him for this work.

IN CURRENT PERIODICALS.

CACAO et *Castilloa*. By H. Hamel Smith. = *Journal d'Agriculture Tropicale*, Paris. IX-07 (July 31, '09). Pp. 196-197.

La Saignée du *Funtumia* par Incisions Verticales. By O. Laoroy. = *Journal d' Agriculture Tropicale*. Paris. IX-97. (July 31, '09). Pp. Pp. 197-200.

Organization Générale d'une Plantation *d'Hevea*. [In French Indo-China.] By G. Verner, agricultural engineer. = *Journal d'Agriculture Tropicale*, Paris. IX-96 (June 30, '09). Pp. 161-164; IX-97 (July 31, '09). Pp. 201-204.

Exploitation et Culture des Linnes à Caoutchouc en Afrique Occidentale. By E. De Wildman. = *Journal d'Agriculture Tropicale*, Paris. IX-96 (June 30, '09). Pp. 172-174.

Principales Clases Comerciales de Caucho y Plartas que las Producen. By Paul Beckman [Translated from *Aus der Natur.*] *Boletin* der Ministerio de Femento, Caracas. I -1 (July, '09). Pp. 19-37.

The Modern Telephone Cable. By Frank B. Jewett. [Deals with paper insulation.] = *Proceedings* of the American Institute of Electrical Engineers, New York. XXVIII-7 (July, '09). Pp. 947-961.

Cinchona-und Kautschukkultur in Ceylon. By Charles Böringer. = *Der Tropenpynzer, Berlin.*. XIII-6 (June, '09.) Pp. 209-274.

## GREAT JOY ON THE ACRE.

THE following report of a joyful celebration in the upriver rubber country comes to us in a Pará newspaper. It does not appear from the paper in what "city" the event occurred:

"Referring to the high price of rubber, our contemporary, *O Estado do Acre*, in its edition of August 26, published the following: 'The people of this city received yesterday the grateful news of the value of 11$300 per kilo [=about $1.56 per pound] of rubber. The joy was so great that immediately was organized a parade of many citizens led by Colonels Laudelino Benigno, Avelino Chaves, Childerico Fernandes, and Raymundo Custodio. They marched through the principal streets of the community and congratulated his Excellency, Dr. José Martins de Freitas, the government delegate, and the other authorities, being on this occasion treated with champagne, etc. The *Estado do Acre* was represented at this meeting, which proved once more the spirit of cordiality that exists between us.'"

## THE AERONAUTIC INTEREST.

THE right to work all the patents of Wilbur and Orville Wright for making aëroplanes in Germany will be controlled by a new company, Flugmaschine Wright, G. m. b. H., formed in Berlin by leading German industrial concerns. Among the participants are the famous Krupp steel manufacturing company, of Essen, and the Allgemeine Elektrizitäts-Gesellschaft, of Berlin.

Orville and Wilbur Wright have received the Cross of the Legion of Honor, the greatest reward which the French republic can confer, as a recognition of their labors in the field of aviation. The ceremony took place on November 6 at the French consulate in New York, and Consul-General George Lanel, acting in behalf of the French president, made the presentation.

Attorneys for the Aëronautic Society of New York have filed in the United States circuit court their answer to the patent infringement suit brought by the Wright brothers against the building of the Curtiss aëroplane, on the ground that the Wright patents are not valid.

Wilbur Wright is quoted as believing that aëroplanes can be built capable of going 100 miles an hour, to continue for 1,000 miles, and carrying six persons.

Lieutenant Frank Lahm, of the United States army signal corps, got the honor badge of the army school of aëronautics at College Point, Maryland, on November 1, when he kept a Wright aëroplane in the air 58½ minutes.

The American record for duration in a balloon flight was made by Clifford B. Harmon in the balloon "New York," starting from St. Louis at the time of the centennial celebration in that city. Harmon remained in the air 48 hours and 26 minutes —the second longest official flight ever made.

A prize of 40,000 marks [=$9,528.40] offered by Dr. Lanz, of Manheim, in a competition limited to aëroplanes constructed in Germany by German builders, and propelled by German-made motors, was won at Johannisthal on October 30 by Hans Grade. He flew 2.5 kilometers [=1.55 miles] in 2 minutes 43 seconds.

A company is being formed in London to organize an aëroplane service across the English Channel, between Calais and Dover.

The government of Italy has decided to have a fleet of dirigible balloons for military use.

The first Association of International Aëronautic Pilots was organized in Boston on November 1. Throughout the world there are already about 250 persons entitled to membership. Charles J. Glidden, of Boston, is president, and A. Holland Forbes, of New York, vice-president.

Two members of the Canadian Aërodrome Co., near Baddock, Nova Scotia, on November 1, gave the aëroplane "Baddeck No. 2" her first official tryout. It is the second heaviest and longest aëroplane in the world. Sixteen miles were covered in 20 minutes 17 seconds, the machine landing at the starting point after circling the course sixteen times.

Mr. Clifford R. Hendrix, of Brooklyn, New York, is mentioned as having ordered a 1910 model Blériot aëroplane, to cost about $2,400.

Experiments are to be begun shortly by the bureau of ordinance of the United States Army, at Sandy Hook, in shooting balloons and other air craft while flying. Recent experiments in Germany of firing upon a balloon in flight have resulted in three types of balloon cannon. One is mounted on wheels, another on a pedestal, and a third on an automobile. The work in Germany has demonstrated that ordinary field artillery is ineffective against airships.

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The inventory of the estate of the late Robert D. Evans, of Boston, included an interest of $125,000 in the Boston and Bolivia Rubber Co., engaged in exploiting crude rubber in the neighbor-

## NEW TRADE PUBLICATIONS.

THE NEW YORK LEATHER BELTING CO. (New York), publish a pamphlet, "From Forest to Factory," devoted to the "Victor" brand of balata belting, which is illustrated with views of more than a score of factories where this belting is in use. [6 x 9 inches. 63 pages.]

JOHN ROYLE & SONS (Paterson, New Jersey), issue their Catalogue No. 214, devoted to Tubing Machines Fixtures. It is illustrated with a number of cuts of parts and fixtures in their line. [4 x 6 inches. 63 pages.]

THE WATSON MACHINE CO. (Paterson, New Jersey), send out a collection of leaflets, each describing and illustrating one of the machines of their production adapted to the insulated wire industry. [6 x 9¼ inches. 62 leaves.]

WOVEN STEEL HOSE AND RUBBER CO. (Trenton, New Jersey), issue a catalogue of mechanical rubber goods and packings. A feature of their products is a patented woven steel armor which is adaptable in different forms to hose for different uses. The packing department of the company has now become extensive and a number of its products are illustrated here. [5⅛ x 8 inches. 40 pages.]

FRED MEDART MANUFACTURING CO. (St. Louis), sends Catalogue G. of Gymnastic Apparatus, of which the company are large manufacturers. This cannot be classed as a catalogue or rubber goods, though not a few of the Medart specialties embrace a certain amount of rubber. [5½ x 8¼ inches. 112 pages.]

THE BEACON FALLS RUBBER SHOE CO. (Beacon Falls, Connecticut) have introduced a new feature in their advertising which is unique—a small monthly periodical, *Rubber*, which is readable as well as attractive in looks. The initial number is dated September, 1909. [4 x 4⅝ inches. 16 pages.]

ENTERPRISE RUBBER CO.—William E. Barker, president and treasurer (Boston)—issue "Our Salesmen in Print, No. 6," covering the latest catalogue of Candee Rubber, with some special remarks to dealers. [3⅝" x 6½". 76 pages.]

ELECTRIC HOSE AND RUBBER CO. (Wilmington, Delaware) issue a catalogue of designs in colors, of their Interlocking Rubber Tiling. The pages of this attractive publication are trimmed in the shape of a section of tiling, which makes it somewhat unlike any other trade publication that has reached THE INDIA RUBBER WORLD. [4⅞" v 4⅞". 14 leaves.]

THE BRISTOL CO. (Waterbury, Connecticut) devote their Bulletin No. 13 to Bristol's Patent Steel Belt Lacing, which is made in various sizes and styles for all kinds of arine and conveyor belts—rubber, leather, and cotton. [8" x 10½". 8 pages.]

WOVEN STEEL HOSE AND RUBBER CO. (Trenton, New Jersey), issue a catalogue of Mechanical Rubber Goods and Packings. A feature of their products is a patented woven steel armor which is adaptable in different forms to hose for different uses. The packing department of the company has now become extensive and a number of its products are illustrated here. [5¾" x 8". 40 pages.]

MASSACHUSETTS CHEMICAL CO. (Walpole, Massachusetts), issue a new edition of their catalogue of liquid, plastic and solid insulations, tapes and fabrics, and molded rubber goods. [6" x 9". 32 pages.]

THE latest catalogue issued by JOHN ROYLE & SON (Paterson, New Jersey), relates to Insulating Machine Fixtures, of which they make a great number. [4" x 6". 58 pages.]

### ALSO RECEIVED.

THE Bristol Co. (Waterbury, Connecticut)=Bulletin 111—Bristol Class II Recording Thermometers. 8 pages.

The Coile Bed Bath Co., Knoxville, Tennessee=The Coile Bed Bath. 16 pages.

Firestone Tire and Rubber Co., Akron, Ohio="Firestone" Demountable Rims. 12 pages.

E. J. Willis Co., New York=Fall Bargain List of Automobile Supplies. 4 pages.

# News of the American Rubber Trade.

SHAREHOLDERS of the Revere Rubber Co. (Boston) lately received circulars offering $200 for their stock, to be deposited with the Safe Deposit and Trust Co., and the First National Bank of New York, on or before December 24. It was soon reported that a majority of the holders had assented to the proposition, which was made with a view to merger with the Rubber Goods Manufacturing Co. The latter are understood to have experienced a shortage of plant capacity. Through the control of the Rubber Goods Manufacturing Co. by the United States Rubber Co., the latter will thus succeed to the ownership of the Revere Rubber Co.

The Revere company are capitalized at $2,000,000, in $100 shares, with approximately 300 holders. Recently shares were reported to have changed hands at $195. For some years 8 per cent. dividends have been paid. No authorized public statement has come out as yet, but it is understood that the intention of all concerned that the Revere company is to keep its individuality, as has been the case with other important factories acquired by the United States Rubber Co.

The result of the annual election of the Revere Rubber Co., to be held on January 12, is looked forward to with interest. At present the directorate embraces Costello C. Converse (president), E. S. Williams (treasurer and clerk), H. M. Rogers, E. S. Grew, Henry C. Morse, I. W. Chick, and F. W. Pitcher.

The Revere Rubber Co. succeeded the Boston Elastic Fabric Co., which was organized in 1863 under the presidency of Liveras Hull, to whom a large part of the first share capital was issued in respect of some patents of his. In February, 1864, the company bought a brick factory at Chelsea, Massachusetts. Three years later the company took on the manufacture of mechanical rubber goods, after having elected to the presidency Charles McBurney, who had been with the Boston Belting Co. There were various changes in the board, and in 1883 the reorganization of the business, since which time it has been continuously successful. It may be mentioned that Mr. Henry C. Morse, still on the board and so long known as the efficient treasurer, first became a director 29 years ago.

### UNITED STATES RUBBER CO.—INCREASE OF CAPITAL.

THE shareholders of the United States Rubber Co. have received a circular dated December 23 inviting subscriptions to 37,370 shares ($3,737,000) of the first preferred stock of the company, now in the treasury, to be distributed proportionately with the present holdings of the subscribers, at the price of $110 per share, the privilege being open until February 1. The directors also purpose selling to a syndicate (including among its participants President Samuel P. Colt and some other directors) $2,500,000 of the first mortgage bonds of the company, and at the option of the company on or before December 20, 1910, to sell to the syndicate $2,500,000 additional in bonds, all at par. The syndicate agree in the meantime to lend to the company $2,500,000 upon the pledge of the second lot of bonds, and also to take at $110 per share any of the preferred stock which under the offer already mentioned may not be taken by the shareholders. The bonds referred to are a part of the $20,000,000 issue of December, 1908, of which thus far only $15,000,000 have been allotted. The directors of the company in announcing the new issue say:

"The increase, as well as the extension of the business of the United States Rubber Co., including the acquisition of properties deemed advisable and advantageous for the company, during the year 1909, has been such as to require from its officers attentive consideration of its steadily increasing cash requirements, especially in view of the unprecedented rise in the price of crude rubber and the corresponding increase in the amount of cash locked up in materials and in the manufactured stock awaiting sale. This condition has been brought before the directors, who are of opinion that these needs should be met by permanent provision, and not by short time loans or discounts."

### REMOVAL OF GEORGE BORGFELDT & CO.

THE importing house of George Borgfeldt & Co. (New York) have removed from the premises long occupied by them in West Fourth street to the large new building which they constructed recently at Sixteenth street and Irving place. The removal occurred on Saturday afternoon, December 4, and on Monday morning at 8 o'clock the employees took up their duties in the new building, without confusion or disorder. There were ten floors in the old building, each a block long, from which thousands of samples had to be checked and packed, but every article was in its proper place in the new building at the opening of the next business day. Besides, an office force of 500 persons was as promptly placed, with their desks and other fixtures. Although unofficially Messrs. Borgfeldt & Co. were fully established in their new headquarters as stated, the official day for visitors will remain as originally planned, January 3, as by that time the new samples now arriving from Europe will be opened up.

### BOSTON BELTING CO.'S NEW BUILDING.

THE Boston Belting Co., during the past year, have added a new factory building to their extensive plant at Roxbury Crossing, in Boston, and now have it in full operation. A piece of land directly across a private way from the main plant was purchased; the old building situated on it torn down or removed, and a new building, 105x64 feet, erected thereon. It is of brick, four stories high, and of slow burning mill construction, built in accordance with the best ideas of modern mill design. It is used exclusively for the cotton weaving and braiding departments which the company have developed of late years. The walls are built with narrow thick pilasters, permitting wide windows which extend up to the under side of the floors, thus insuring an abundance of sky light so essential to a textile factory. The lower floor is of concrete, but the other floors are of plank four inches thick. A large hydraulic plunger elevator with a 9-foot square platform, situated near the center of the building, serves all departments. Power is furnished by a Westinghouse gas engine, whose cylinder jackets are made use of for heating the wash water for the mill. Steam for heating is supplied from the

BOSTON BELTING CO.'S NEW BUILDING.

boilers in the main plant through a pipe laid under the private way mentioned above. In the design of this mill, special attention was paid to the subjects of light, heat, ventilation, and to the safety and comfort of the operatives, resulting in a mill well adapted to care for the growing needs of the textile branches of the Company's business.

### CONVENTION OF EUREKA FIRE HOSE FORCES.

THE selling forces of the Eureka Fire Hose Manufacturing Co. met the management of the company on Dec. 2-3 at the Waldorf-Astoria Hotel, in New York, in the State apartment. The object of the meeting was to discuss the unusual conditions in the business due to the high costs of the rubber and cotton yarn which enter into the products of the company. It was agreed that rather than permit the quality of the high grade, well known, standard brands of fire hose manufactured by the company to become deteriorated, the selling prices should be advanced. Luncheon was served at the Waldorf on Dec. 2 and dinner at the Hotel Lafayette, after which a theater party was arranged. The business discussion was resumed on the second day, and after luncheon all the members of the party visited the factory at Jersey City, going from New York in automobiles. In view of the success of the meeting it was agreed that a similar one should be held in New York during the coming year. Those present were:

OFFICERS.

Benjamin L. Stowe, president.
Isaac B. Markey, vice-president.
George A. Wies, treasurer and general manager.
N. F. McKeon, secretary and general factory manager.
F. R. Grady, assistant to general factory manager.

THE SALESMEN.

P. O. Herbert, Atlanta, Georgia.
L. S. Russell, Dallas, Texas.
H. F. Pratt, Columbus, Ohio.
C. H. Dixon, Fargo, North Dakota.
E. M. Yarrell, Kansas City Missouri.
M. J. and W. P. Burke, Syracuse, New York.
G. F. Hand, Chicago.
F. P. Hoy and W. E. McGuffin, Minneapolis, Minnesota.
J. M. Hardy, Boston.
A. T. Shearer, Omaha, Nebraska.
J. Quinlan and P. W. Outwater, New York City.

### MESSRS. APPLETON INCORPORATE.

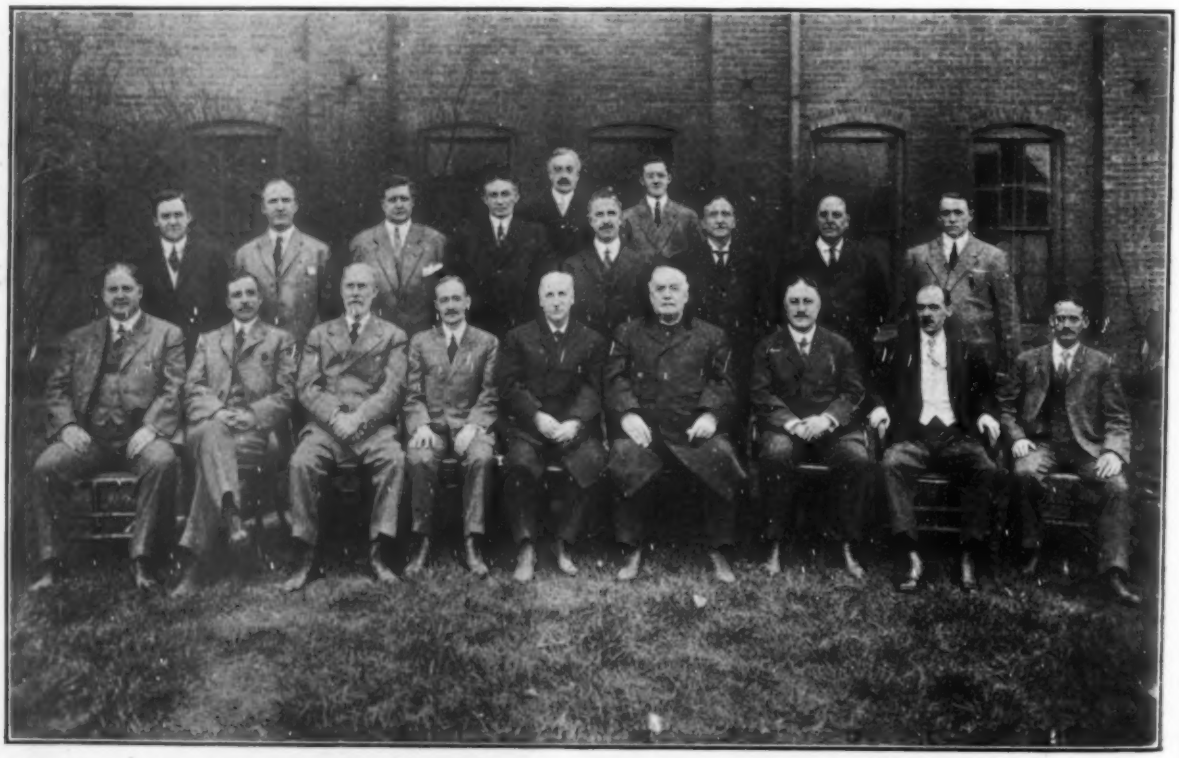
PAPERS of incorporation were filed with the secretary of state of Maine, on November 10, 1909, for F. H. Appleton & Son, Inc. The capital stated is $250,000, and the directors Francis H. Appleton, Brookline, Massachusetts; and Francis H. Appleton, Jr., and F. L. Tufts, Franklin, Mass. The firm have been making reclaimed rubber for several years at Franklin, where they acquired the plant used formerly for the same purpose by the Colonial Rubber Goods Co. They have been adding to the premises a storehouse 50 x 150 feet.

### ASBESTOS STEAM HOSE.

THE patented "Bonnerbestos" steam hose, one of the new specialties of the Empire Rubber Manufacturing Co. (Trenton, New Jersey), is offered for the critical inspection of the trade. It is pointed out that the length of service of ordinary hose is limited to the life of the cotton fabric contained, while that of the rubber is usually twice as long. The asbestos fabric used in this hose is woven of brass wire cored asbestos thread, strictly fireproof, which feature is as durable as the rubber itself. Railroads will be supplied with enough for trial tests.

### THE GROWING MOTORCYCLE TIRE TRADE.

THE motorcycle field is rapidly developing great possibilities for the tire manufacturer. Both the Goodrich and the Diamond companies have put motorcycle tires on the market during the last year, and are preparing to meet a large demand for them in 1910. "While the number of motorcycles manufactured this year was hardly greater than 20,000," said E. C. Tibbits, advertising manager of the B. F. Goodrich Co. (Akron, Ohio), to a



CONVENTION OF OFFICERS AND SALESMEN OF THE EUREKA FIRE HOSE MANUFACTURING CO.

[Photographed in front of the company's factory, at Jersey City, New Jersey.]

correspondent of THE INDIA RUBBER WORLD, "in 1910 some 75,000 new machines will be put on the market. The simplifying of engine will work wonders in popularizing the motorcycle and will have the effect of cutting the weight of the machine in two." The Goodrich company have put sufficient importance on the motorcycle tire field to issue among their advertising publications a monthly paper of 16 pages, named *The Clincher*, devoted entirely to the motorcycle trade, and especially designed to promote the popularity of the sport. Clubs have been rapidly forming in the middle west, for women as well as men, since the invention of a rumble seat attachment for cycles has made motorcycling a social pastime as well as a sport.

### CONVERSE RUBBER SHOE CO.

THIS company, scarcely more than a year old, having been organized in November, 1908, has already taken an important place in the rubber footwear trade. The work of erecting a factory was begun in the last days of December, and the buildings were completed and the machinery installed and in operation by May 1. Salesmen started on the road with samples on May 10, and came off the road on July 10, with the year's production practically sold. The officers of the company are experienced handlers of rubber footwear. The president is M. M. Converse, formerly of the firm of Converse & Pike, in the footwear trade in Boston, and later manager of the Beacon Falls Rubber Shoe Co., Boston. J. S. Capen, the treasurer, some time with the Enterprise Rubber Co., was also later with the Beacon Falls company.

### TO MAKE BALTA BELTING AT YOUNGSTOWN.

THE Republic Rubber Co. (Youngstown, Ohio) announce that they have acquired the balata belting business of Robins New Conveyor Co. (New York), and, in conjunction with the original English manufacturers of this product, are erecting a large and modern plant at Youngstown for its manufacture in the United States. This belting has heretofore been sold in this country under the name of "Robins Genuine Balata Belting," but in the future will be sold as "Lanco" Genuine Balata Belting, the brand under which it is marketed throughout the eastern hemisphere.

The Republic Rubber Co. have secured from the Irwell and Eastern Works (Salford, Manchester) the exclusive manufacturing rights in America for the belting referred to. Mr. James Tinto, president and general manager of the English company referred to, is at present in Youngstown, accompanied by the company's chief constructing engineer, Mr. Gomersoll. These gentlemen are there for the purpose of directing the starting of the large plant to be erected by the Republic company for their new line, which they purpose making an important part of their business.

### NEW MACHINE COMPANY IN AKRON.

THE Akron Rubber Mold and Machine Co. were incorporated December 21, under the laws of Ohio, with a capital stock of $10,000. They have bought the plant of the Federal Machine Co., of Akron, and will make a specialty of the manufacture of rubber tire molds, having contracts with tire-making companies. Stanley W. Harris, now superintendent of the Taplin-Rice-Clerkin machine shop of this city, will be manager and with him will be associated William D. Morris, mechanical engineer of the Federal Rubber Co., of Youngstown, Ohio, and Frank Hobach, of this city.

### ADDITIONAL AKRON NEWS.

WITH the beginning of the new year the Swinehart Tire and Rubber Co. will put in operation their new factory, in which they will make pneumatic tires. The company announce that they have actual orders for over 30,000 pneumatics.

The B. F. Goodrich Co. are planning to erect two additional six-story factory buildings early in the spring. One will be put on Falor street, across from the Diamond plant, and the other on the canal in the rear of the main buildings.

The Diamond Rubber Co. expect to put the product of their boot and shoe department on the market shortly after the first of the year, when a sales manager for that department will arrive to take up his duties. It is probable that a separate selling force will be organized for this line.

The keen competition for 1910 tire business will result in a large representation by rubber companies at the New York automobile shows, beginning December 31 and ending January 15.

Mr. C. B. Raymond was re-elected president of the Akron Chamber of Commerce, at the annual meeting early in December. Though it is against the policy of the chamber to re-elect presidents, Mr. Raymond's efficiency prompted the directors to lay aside the rules.

### UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for five weeks, ending December 25

COMMON STOCK, $25,000,000.

[Less $1,344,000 in treasury of a subsidiary company.]

Last Dividend, April 30, 1900—1%.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Week November | 27 | Sales | 12,900 | shares | High | 52¾ | Low | 50 |
| Week December | 4 | Sales | 15,450 | shares | High | 54 | Low | 50 |
| Week December | 11 | Sales | 4,223 | shares | High | 53½ | Low | 52½ |
| Week December | 18 | Sales | 17,900 | shares | High | 54⅞ | Low | 52½ |
| Week December | 25 | Sales | 5,515 | shares | High | 54⅞ | Low | 53 |

For the year—High, 57⅝, Aug. 19; Low, 27, Feb. 24.
Last year—High, 37½; Low, 17½.

FIRST PREFERRED STOCK, $36,263,000.

Last Dividend, Oct. 30, 1909—2%.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Week November | 27 | Sales | 10,200 | shares | High | 118 | Low | 115¾ |
| Week December | 4 | Sales | 2,680 | shares | High | 117¾ | Low | 115 |
| Week December | 11 | Sales | 1,400 | shares | High | 118 | Low | 116⅛ |
| Week December | 18 | Sales | 2,210 | shares | High | 117½ | Low | 117 |
| Week December | 25 | Sales | 1,850 | shares | High | 118½ | Low | 116⅞ |

For the year—High, 123½, Aug. 24; Low, 98, Jan. 29.
Last year—High, 108; Low, 76.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, Oct. 30, 1909—1½%.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Week November | 27 | Sales | 3,810 | shares | High | 85 | Low | 80¾ |
| Week December | 4 | Sales | 1,800 | shares | High | 82⅝ | Low | 80 |
| Week December | 11 | Sales | 580 | shares | High | 84 | Low | 82 |
| Week December | 18 | Sales | 950 | shares | High | 84 | Low | 83 |
| Week December | 25 | Sales | 46 | shares | High | 84 | Low | 83½ |

For the year—High, 89½, Aug. 23; Low, 67½, Feb. 25.
Last year—High, 75½; Low, 42.

SIX PER CENT. CERTIFICATES, $20,000,000.

$15,000,000 issued.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Week November | 27 | Sales | 31 | certs. | High | 104⅛ | Low | 104 |
| Week December | 4 | Sales | 63 | certs. | High | 104⅛ | Low | 104 |
| Week December | 11 | Sales | 7 | certs. | High | 104¼ | Low | 104⅛ |
| Week December | 18 | Sales | 67 | certs. | High | 104¾ | Low | 104 |
| Week December | 25 | Sales | 48 | certs. | High | 104⅝ | Low | 104⅜ |

### TRADE NEWS NOTES.

THE corporation Alling Rubber Co. have filed with the secretary of state of Connecticut a certificate of change of location from New Haven to Bridgeport.

The American Mills Co., manufacturers of elastic fabrics at Waterbury, Conn., have increased their capital from $150,000 to $400,000.

The Millville factory of the Woonsocket Rubber Co., devoted to making boots, resumed work on December 16, after having been closed for a month.

Fred H. Jeffrey has been appointed manager of the branch at St. John, New Brunswick, of the Canadian Rubber Co. of Montreal, Limited, to succeed Paul R. Hanson. Mr. Jeffrey has been in the employ of the company at Montreal for several years.

The Rubber Goods Manufacturing Co. declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable on December 15.

An agreement has been made by the fire hose manufacturers that after January 1, 1910, samples of fire hose submitted with bids shall not measure over 6 inches in length.

The Converse Rubber Shoe Co. (Malden, Massachusetts), have taken on the manufacture of a line of tennis goods.

### BOSTON BELTING CO.'S ANNUAL.

At the annual meeting of Boston Belting Co., on November 29, in Wesleyan Hall, Boston, the annual reports were received and approved. The directors were reëlected: Thomas, A. Forsyth, J. H. D. Smith, Lewis M. Crane, Charles H. Moseley, Francis H. Stevens, William H. Furber and George A. Miner. Thomas A. Forsyth was reëlected president; J. H. D. Smith, treasurer and clerk; and Thomas Lang, Jr., and Charles J. Upham, auditors. The usually quarterly dividend—No. 161—has been declared payable January 1, to shareholders of record December 15, 1909. The balance sheet as of September 30, 1909, is appended:

ASSETS.

| | | |
|---|---|---|
| Real estate—land and buildings..... | $254,281.85 | |
| Machinery ..... | 250,702.48 | |
| Tools, furniture, and fixtures..... | 97,661.80 | |
| Cash ..... | 40,065.26 | |
| Bonds Receivable, Notes Receivable, Investment Account, Accounts Payable. | 798,420.67 | |
| Merchandise ..... | 911,366.04 | |
| Trade marks ..... | 100.00 | |
| Sundries ..... | 550.00 | |
| | | $2,353,148.10 |

LIABILITIES.

| | | |
|---|---|---|
| Capital .....$1,000,000.00 | | |
| Reserve fund ..... | 800,000.00 | |
| Profit and loss..... | 379,148.10 | |
| Notes payable ..... | 174,000.00 | |
| | | $2,353,148.10 |

### NEW INCORPORATIONS.

Monatiquot Rubber Works Co., October 21, 1909, under the laws of Massachusetts; capital $50,000. Incorporators: Robert Jackson Cram, No. 14 Mount Vernon street, Boston; Frank M. Sawtelle, Malden; and Atherton N. Hunt, Braintree, Massachusetts.

Interborough Rubber Co., November 24, 1909, under the laws of New Jersey; capital $50,000. Incorporators: Francis C. Lowthrop and Elwood W. Moore, Jr., of Trenton, and William N. Cooper, of Burlington, New Jersey. This is a sales company and it is stated that the business office probably will be in New York.

International Rubber Co., November 23, 1909, under the laws of Delaware; capital, $1,000,000. Incorporators: David A. Sullivan, C. J. Brooks, and Fred Burkhardt, all of Brooklyn, New York.

Monroe Spring Tire Co., November 22, 1909, under the laws of New Jersey; capital, $100,000. Incorporators: Edwin T. Monroe and Frederick G. Brown, Riverton, New Jersey, and Preston T. Rhodes, Philadelphia.

The E. H. Holstein Rubber Co., November 17, 1909, under the laws of Connecticut; capital, $10,000. To deal in rubber goods. Incorporators: Eva H. Holstein, Joseph S. Holstein, and Abraham Kusnitshy, all of Hartford, Connecticut.

Maitland Tire and Tube Co., December 10, 1909, under the laws of Delaware; capital, $500,000. Incorporators: F. M. Shive, S. E. Roberson, and H. W. Davis, all of Wilmington, Delaware.

The Guatemala Rubber and Plantation Co., November 29, 1909, under the laws of Maine; capital $500,000, of which $150,000 is stated to be paid in. Incorporators: Lindley M. Webb (president), Charles J. Nichols (treasurer), and George E. Height, all of Portland, Maine.

Essex Manufacturing Co., November 18, 1909, under the laws of Maine; capital $100,000. To manufacture rubber heels and arch supporters. Incorporators: Albert H. Peavey (president), E. J. Burnham (clerk), and G. E. Burnham (treasurer, all of Kittery, Maine.

The Slip-Over Tire Co., October 11, 1909, under the laws of Indiana; capital $3,000, of which $2,000 preferred. Directors: John W. Fudge, Fred O. Gephart, and George M. Kocker. Place of business, Marion, Indiana.

West Borneo Rubber Co., December 2, 1909, under the laws of Illinois; capital $3,000. Directors: William B. Mey, William Wyers, and Henry W. Huttmann, who also were the incorporators. Principal office, No. 172 Washington street, Chicago.

Bartnett Automobile Tire Co., November 15, 1909, under the laws of New York; capital, $80,000. Incorporators: Frank A. Bartnett, Patrick W. Bartnett, and Patrick J. Leahon, all of New Rochelle, New York.

### TRADE NEWS NOTES.

The Firestone Tire and Rubber Co. announce additional distributing agencies for Firestone tires and demountable rims as follows: Whitaker Tire and Rubber Co., Memphis, Tennessee; Harris Tire Co., Savannah, Georgia, and Central Automobile Co., Vancouver, British Columbia.

So that room may be provided to build an addition to their extracting plant, The Diamond Rubber Co. have petitioned the council of the village of Kenmore, a suburban corporation south of Akron, to vacate part of a street adjoining the plant.

George A. Alden & Co., india-rubber merchants, who for so many years maintained their offices and warehouses at No. 60 Chauncy street, have removed to the Merchants Building, Nos. 77-79 Summer street, where they have handsomely equipped offices most conveniently arranged.

The recent purchase by D. Lorne McGibbon, president of the Canadian Consolidated Rubber Co., and his associates, of important holdings in La Rose Consolidated Mines Co., in Canada, has been followed by the election of Mr. McGibbon to the presidency of the latter company. Among Mr. McGibbon's associates who have joined the board of the mining company are several directors in the rubber company.

Mr. T. H. Peaty, of the Raw Products Co. (New York), recently returned from Europe, having established new connections in London, Liverpool, Paris, Antwerp and Hamburg. The Raw Products Co. distribute a general line of crude rubber.

Mr. Paul Schindler, who is in charge of the Berlin, Germany, office of the Hodgman Rubber Co., was in New York recently and reported a steadily increasing demand in Germany for certain lines of rubber goods of American manufacture.

The U. S. Rubber Reclaiming Works (New York) will be represented in Boston from February 1 next by Mr. Ernest Jacoby, who, for some nine years past, has been the Boston representative of A. T. Morse & Co.

The Eureka Fire Hose Manufacturing Co. have opened an office in San Francisco, for the handling of their fire hose business on the Pacific coast, under the management of Mr. W. A. Daggett, with headquarters in the Postal Telegraph building.

The Atlantic Rubber Co. (Hyde Park, Massachusetts) are erecting a special fireproof building of cement stone for their proofing department, which will greatly increase their present capacity on this line of work. They have been greatly handicapped heretofore on account of limited space for this constantly increasing business on custom proofing.

Mr. Ephraim L. Corning, who was a recent visitor to his old home in Boston, was long one of the larger shareholders in the Boston Rubber Shoe Co. and a close friend of the late President Converse. He was for many years a director of the Boston company, and for a while a director in the United States Rubber Co. Mr. Corning's father, the late H. K. Corning, was a rubber importer in New York as early as 1850, and the Corning firm at one time occupied a commanding position in this trade. Mr. Corning for several years has resided at Geneva, Switzerland.

The Revere Rubber Co. were incorporated under the laws of Massachusetts, in 1883. The first board of directors embraced the late Joseph Banigan, the founder of the Woonsocket Rubber Co.; Henry L. Hotchkiss, now president of the L. Candee & Co.; the late Hon. Elisha S. Converse, of the Boston Rubber Shoe Co.; the late George A. Alden, india-rubber merchant; Franklin W. Pitcher, now general manager of the Easthampton Rubber Thread Co.; Henry Rogers, and Henry C. Morse.

ALBERT, KING OF THE BELGIANS.

[Succeeds Leopold II, who died December 17. The new King is a nephew of Leopold, aged 34 years. He lately visited the Belgian Congo, in the development of which he has taken a live interest.]

#### CHRISTMAS AT THE "NATIONAL" FACTORY.

THE long established custom of making Christmas presents at the factory and offices of the National India Rubber Co. (Bristol, Rhode Island) was observed this season. The salesmen and the treasurer (Mr. Brown) made a present to Le Baron C. Colt, manufacturing agent. The officers and clerks at the factory made a present to Mr. Brown. The factory foremen remembered Superintendent Cushman. And, generally, the heads of departments were the recipients of gifts from the workers in the departments, while members of the working force who were ill were particularly well remembered by those in charge.

#### NEW RUBBER FIRM AT HARTFORD.

THE E. H. Holstein Rubber Co. (Hartford, Connecticut), the incorporation of which is reported in another column, has been formed to conduct a retail rubber goods store. They succeed to the business of the Connecticut Rubber Co., incorporated November 1, 1901, having bought the stock and good will from the receiver.

#### ASSIGNMENT OF THE RICKABY COMPANY.

A GENERAL assignment for the benefit of creditors was made on December 21 by the Rickaby Rubber Manufacturing Co. (South Framingham, Massachusetts), rubber reclaimers. The firm was organized in the latter part of 1906 by Frank B. Rickaby, who had an extensive acquaintance with the trade, first in crude rubber and later in the reclaiming line.

#### TRADE NEWS NOTES.

AN artistic New Year's card from Mr. J. Schnurmann, of London and New York, ornaments the desks of the firm's many customers on both continents.

Senaca G. Lewis has resigned the position of sales manager of the Winchester Repeating Arms Association (New Haven, Connecticut) to become general manager of the Pennsylvania Rubber Co., the change taking place on February 1.

The Thermoid Rubber Co. (Trenton, New Jersey), hitherto known more especially for its "Thermoid" brake lining, are preparing to take on the manufacture of a line of pneumatic tires, to be known by the same trade mark.

Not the least interesting item in connection with the change of control of the Revere Rubber Co. (Boston), reported in another column, is that it further concentrates the manufacture of pneumatic tires in the United States. The Revere factory make the "Continental" tires sold in this country.

#### PERSONAL MENTION.

THE death is announced of Dr. Moritz Greshoff, the distinguished director of the Colonial Museum at Haarlem, Netherlands. It occurred in the night of December 7-8, in his forty-eighth year.

Mr. W. J. Gallagher has been appointed director of agriculture and government mycologist in the Federated Malay States, to succeed Mr. J. B. Carruthers, whose transfer to Trinidad has been reported in this journal.

Dr. Alexander Petrunkevitch, an honorary curator at the American Museum of Natural History, at New York, returned recently from an extended visit to Mexico, in quest of specimens. He was a guest for ten days on Mr. James C. Harvey's rubber plantation, "La Buena Ventura," on the Isthmus of Tehuantepec.

An interesting letter of travel dated from Cimiez-Nice, France, in the Medford (Massachusetts) *Mercury*, is from the facile pen of Mr. Allison M. Stickney, of the Wellman Co., of Medford. Mr. Stickney is known to the rubber trade in every country, and his talent for writing to all the readers of THE INDIA RUBBER WORLD.

Mr. Richard P. Hood, foreign representative of the Hood Rubber Co., with headquarters at 17, rue Richer, Paris, came home to spend Thanksgiving with his brothers, and returned to Europe early in the past month.

Mr. William Vernon Backus, of Mexico City, where he is an important member of the bar as well as being interested largely in the rubber planting interest, was a recent visitor to the United States.

#### TRADE NEWS NOTES.

THE Apsley Rubber Co. have removed their Boston offices to the Haynes building, No. 146 Summer street. The new premises embrace private offices for President L. D. Apsley and Secretary William B. Laighton, and sample and sales rooms for footwear and waterproof clothing.

L. J. Mutty Co., rubber goods merchants of Boston, have removed their offices and salesrooms to Nos. 91-93 Federal street.

The Vaughn-Upton Co., December 10, 1909, was incorporated under the laws of Massachusetts; capital, $50,000. Incorporators: Frank M. Vaughn, Jr. (president), Medford; William F. Cushman (treasurer), Henry J. Upton (clerk), Boston.

The Goodyear Tire and Rubber Co. (Akron, Ohio) have taken a ten years' lease on premises in Seventh street, Cincinnati, for their branch in that city. The contract calls for a rental of $54,000 for the ten years.

A. H. Alden & Co., Limited, india-rubber merchants in London, have removed from 39 Mincing lane, to larger premises, Ocean House, 24 and 25 Great Tower street, E. C.

Felix Dorn, long connected with Hecht, Levis & Kahn, has started in business as C. F. Dorn & Co., general produce brokers, devoting special attention to india-rubber, at Hartley buildings, 11 Old Hall street, Liverpool.

## THE THOMPSON TAPPING KNIFE.

WHAT appears to be an exceedingly practical tapping tool is the knife shown in the accompanying engraving. It is made wholly of iron, so that it is indestructible. The cutting device is exactly adapted for the grooved cuts that have been found to be most effective and safe. A very simple gage allows of a very effective measuring for the depth of the cut. Two

THE THOMPSON TAPPING KNIFE.

dozen of these knives are already in successful use on "El Encanto" rubber plantation in Chiapas, Mexico. The inventor of the knife, Mr. George T. Thompson, of Canandaigua, New York, is prepared to fill orders at $2.50 a knife.

# The Season's Automobile Shows.

THE tenth international automobile show under the auspices of the American Motor Car Manufacturers' Association, was opened on Friday evening, December 31, at the Grand Central Palace, New York. The description "independent" as applied to the great majority of automobile exhibitors at the Palace show is used to distinguish these makers from the members of the Association of Licensed Automobile Manufacturers, whose annual show at Madison Square Garden, beginning on the evening of January 8, will succeed, with an interval of only one day, the one now in progress.

The members of the Licensed Automobile Manufacturers build their cars under license from the Selden patent on gasoline automobiles; the others are outside that association. At the Palace show now in progress, however, the peculiar condition presents itself of half a dozen makes being on exhibit that have been produced under the Selden patent. The reason is that several firms, following the recent decision in the United States court sustaining the Selden patent, joined the A. L. A. M., but too late to disturb show arrangements already made.

While the scope of this journal does not extend to reporting on automobile types, it may be mentioned here that in the Palace show more attention is devoted to European types than will be true at the Madison Square show. It is this feature which entitles the former to be termed an "international" show. While the exhibits of the importers at the Palace may be less striking than in the recent London show, the display contains many of the features that made the Olympia exhibition the greatest ever held across the Atlantic. It is to be remembered that the lack of automobile shows this season in Paris and in Berlin lent particular importance to Olympia as an exhibition place for novelties in European automobile construction. There are in the Palace show, it is estimated, foreign cars totaling in value nearly $500,000.

If the makers of motor car tires are introducing decided novelties in types of tires at this year's show they have concealed with care any advance information regarding the same. But every evidence exists that the tendency at this moment is toward the use of larger car wheels, and of larger tires, not only in diameter, but in cross section. Not even the higher cost of rubber—and this does not lessen the cost of tires—has checked this tendency. It has been admitted on all sides that too many cars have been equipped with pneumatic tires of too small dimensions for economic or even safe operation. These two considerations appeal to the intelligent motorist—when supported by the prominent tire makers—and the larger tire comes into use as a matter of course.

There are cars at the Palace show equipped with pneumatics ranging from 28 in.x3 in. to 40 in.x4 in., the smaller being applied of course, to the machines of lighter weight. The striking feature of the show is the pronounced use of 36-inch tires, both in the 4 in. and the 4½ in. section, there being fourteen exhibitors listing these sizes, both front and rear. Tires of 5 in. section are shown on machines, on wheels with diameters from 36 to 39½ inches. But all the tires of more than 36 inches in diameter are used only on the largest and highest powered cars. The 34 in.x4 in. tire is most common on "popular priced" cars.

More and more the development of commercial vehicles appeals to the interest of the rubber tire manufacturer, and this year's shows in New York mark no exception to the rule. Hitherto huge trucks, self propelled and equipped with rubber tires of suitable size, usually have been the center of attraction, apart from automobiles proper. But this season will be exhibited an unusual number of small trucks, many of not more than one ton capacity, and at prices surprisingly low as compared with former quotations. There has been noted particularly a demand for commercial auto trucks from merchants who now employ single horse vehicles for their delivery work. But they all increase the demand for rubber tires.

### AUTOMOBILES AND TIRES AT OLYMPIA.

THE eighth International Motor Exhibition at Olympia, London, November 12-20, under the patronage of the King and the Prince of Wales, was unusually notable this season from the fact that it was the only large automobile show in Europe, none being held in Paris or Berlin. In consequence the leading Continental makers were represented at Olympia to an unusual extent, making it a truly international show. A few leading American makes were represented, and particularly American accessories, including The B. F. Goodrich Co., in the tire department.

The tire exhibits were unusually numerous, representing 27 firms—British, French, German, and American. It cannot be said that any real novelties were exhibited in the way of tires, but there were new features in tire accessories on many of the stands. There were new rims, valves, and security bolts; tire protectors; repair outfits; non-skidding devices, and so on, so that the tire department proved one of the most attractive features of the show to very many of the visitors.

The Olympic show was, as usual, arranged by The Society of Motor Manufacturers and Traders, Limited, in connection with The Royal Automobile Club. The membership of the society first named embraces most of the rubber tire manufacturers in Great Britain and on the continent, and also The B. F. Goodrich Co., Limited, of 7, Snow Hill, London.

### THE STANLEY SHOW.

AT Royal Agricultural Hall, Islington, London, was held on November 19-27 the thirty-third annual Stanley Show, described this year as devoted to "cycles, motorcycles, motor vehicles, aëroplanes, and accessories." Originally it was a bicycle show alone, but while the bicycle in England still attracts visitors to a show, the newer inventions naturally share larger in the interest of the public. The tire makers were, as usual, much in evidence at the Stanley Show, most of them giving prominence to their equipment for motorcycles, the popularity of which in England is constantly on the increase.

## THE LATEST PLANTATION HANDBOOK.

THE growth of the rubber planting interest is illustrated in an interesting way by comparing the size of the three editions published to date of the important handbook, "Rubber Producing Companies," brought out by Messrs. Gow, Wilson & Stanton, Limited, tea and rubber brokers, of London. The first (1906) edition was comprised in 62 pages. The second (1908) contained 284 pages. The third (1909) edition embraces no fewer than 551 pages. The increase in size of these successive volumes is due chiefly to the greater number of plantation companies reported on, though it must be said that an additional amount of space is necessary year by year on account of the additional information available in regard to the longer established companies, in respect of planting, rubber yields, dividends, and the like. The value of the latest compilation is enhanced by the inclusion in it of particulars supplied by the publishers in the *Times of Ceylon* in relation to rupee and dollar comparisons, this department of the book being in effect a second edition of the valuable "Tropical Investors' Guide" published by the *Times* at Colombo, two years ago.

The book is substantially and handsomely got up and sells at 5 shillings.

# American Imports of Scrap Rubber.

THE development of the reclaimed rubber interest in the United States has been accompanied by a large importation of waste or scrap rubber, a class of material twenty years ago of little commercial value outside this country. It may be of interest to have a record of details of such imports showing the countries of origin and the quantities (in pounds) of the rubber scrap imported as shown by official statistics for fiscal years ending June 30. It will be seen from our table that whereas less than 500,000 pounds of scrap were imported in 1890-91 from seven countries, the imports in 1908-09 reached 20,497,695 pounds and were derived from 28 countries. Today more scrap is utilized abroad than formerly.

| From— | 1891. | 1892. | 1893. | 1894. | 1895. | 1896. | 1897. | 1898. | 1899. |
|---|---|---|---|---|---|---|---|---|---|
| Austria-Hungary | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Belgium | ..... | ..... | ..... | ..... | 3,910 | 12,229 | 16,928 | 74,683 | 196,790 |
| Bulgaria | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Denmark | ..... | ..... | 24,238 | ..... | 52,053 | 46,628 | 15,424 | 129,811 | 90,075 |
| France | ..... | ..... | 24,610 | 68,211 | 52,045 | 42,868 | 41,264 | 84,769 | 64,782 |
| Germany | 108,175 | 319,853 | 104,653 | 707,647 | 742,259 | 1,910,033 | 1,291,353 | 2,857,606 | 3,560,065 |
| Greece | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Italy | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Netherlands | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4,433 | 4,653 |
| Norway | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Portugal | ..... | ..... | ..... | ..... | 13,637 | ..... | ..... | ..... | ..... |
| Roumania | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Russia | 21,668 | 15,102 | 22,000 | ..... | 131,361 | 398,321 | 864,813 | 1,715,052 | 3,323,258 |
| Spain | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sweden and Norway | ..... | 11,516 | ..... | 10,675 | 15,540 | ..... | ..... | 14,267 | 33,800 |
| Sweden | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Switzerland | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Turkey in Europe | 20,593 | 59,230 | 65,233 | 131,621 | 67,405 | 51,437 | 18,178 | 50,988 | 115,143 |
| United Kingdom | 246,257 | 896,787 | 117,929 | 188,997 | 254,489 | 240,439 | 593,798 | 269,652 | 426,790 |
| Bermuda | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| British Honduras | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Canada | 87,008 | 534,817 | 548,067 | 664,498 | 583,871 | 659,830 | 398,913 | 2,051,207 | 2,673,547 |
| Newfoundland, Labrador | ..... | 767 | ..... | ..... | ..... | ..... | ..... | 410 | 1,600 |
| Costa Rica | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Mexico | ..... | ..... | ..... | ..... | ..... | 3,140 | ..... | 17 | ..... |
| Miquelon, Langley, etc. | ..... | ..... | ..... | ..... | ..... | ..... | 600 | ..... | ..... |
| British West Indies | ..... | ..... | ..... | ..... | 112,266 | ..... | ..... | ..... | 4,220 |
| Panama | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Cuba | 2,033 | ..... | 3,813 | 2,359 | 3,721 | ..... | 4,524 | ..... | ..... |
| Danish West Indies | ..... | ..... | ..... | ..... | ..... | ..... | 15,212 | ..... | ..... |
| Brazil | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Columbia | ..... | 1,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| British Guiana | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Dutch Guiana | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 39,042 | ..... |
| Chile | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Venezuela | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 40,493 | ..... |
| Chinese Empire | ..... | ..... | ..... | ..... | ..... | ..... | 3,700 | 2,470 | ..... |
| British East Indies | 2,429 | ..... | ..... | ..... | ..... | 409,752 | 389,238 | 2,140,358 | ..... |
| Straits Settlements | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Hongkong | ..... | 2,717 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Turkey in Asia | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 13,069 | 17,881 |
| Australia, Tasmania | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| New Zealand | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Hawaii | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,000 |
| Total | 488,163 | 1,841,786 | 910,543 | 1,774,008 | 2,032,563 | 3,874,677 | 3,653,945 | 9,488,327 | 10,513,604 |

| From— | 1900. | 1901. | 1902. | 1903. | 1904. | 1905. | 1906. | 1907 | 1908. | 1909. |
|---|---|---|---|---|---|---|---|---|---|---|
| Austria-Hungary | 7,060 | 32,086 | ..... | ..... | ..... | ..... | 107,455 | 102,818 | 105,480 | 136,536 |
| Belgium | 300,419 | 264,700 | 309,630 | 338,912 | 82,731 | 32,413 | 31,700 | 266,175 | 123,493 | 222,795 |
| Bulgaria | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 27,200 |
| Denmark | 7,273 | 54,970 | ..... | ..... | 19,104 | 54,045 | 112,346 | 355,762 | 239,981 | 385,371 |
| France | 190,901 | 225,792 | 316,281 | 531,032 | 537,626 | 837,975 | 1,331,536 | 1,675,836 | 1,095,170 | 1,295,919 |
| Germany | 9,810,311 | 5,797,120 | 8,716,907 | 8,290,920 | 3,126,742 | 2,277,221 | 5,212,716 | 7,402,928 | 3,640,805 | 4,567,289 |
| Greece | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2,541 | ..... | ..... |
| Italy | 3,797 | ..... | ..... | ..... | ..... | 5,952 | 11,858 | 300 | 28,032 | 7,475 |
| Netherlands | ..... | ..... | 111,315 | 1,860 | 2,905 | 13,450 | 114,993 | 310,594 | 246,037 | 673,999 |
| Norway | ..... | ..... | ..... | 573,575 | 501,510 | 402,634 | 497,614 | 490,012 | 228,435 | 584,681 |
| Portugal | ..... | 2,530 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Roumania | ..... | ..... | ..... | ..... | 18,899 | ..... | 5,684 | 15,576 | ..... | ..... |
| Russia | 5,047,516 | 6,212,765 | 8,536,237 | 10,454,897 | 12,460,187 | 6,788,582 | 7,891,040 | 7,766,304 | 4,694,731 | 3,340,706 |
| Spain | ..... | 4,300 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sweden and Norway | 95,175 | 251,940 | 363,448 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sweden | ..... | ..... | ..... | 11,447 | 169,222 | 584,767 | 1,000,319 | 667,544 | 616,771 | 519,243 |
| Switzerland | ..... | ..... | ..... | ..... | ..... | ..... | 24,451 | 42,503 | 10,677 | 65,041 |
| Turkey in Europe | 123,866 | 83,498 | 243,352 | 316,606 | 259,501 | 473,521 | 613,116 | 610,757 | 342,340 | 718,490 |
| United Kingdom | 1,006,513 | 996,484 | 1,089,082 | 1,851,168 | 1,224,990 | 1,367,262 | 3,989,394 | 5,250,490 | 1,671,666 | 3,050,019 |
| Bermuda | ..... | 1,150 | 700 | 900 | 100 | ..... | 2,650 | 15,031 | 3,116 | 2,897 |
| British Honduras | ..... | ..... | ..... | 165 | ..... | ..... | ..... | ..... | ..... | ..... |
| Canada | 2,496,852 | 1,297,645 | 3,078,532 | 2,205,745 | 1,788,155 | 2,624,417 | 3,646,384 | 3,873,218 | 2,684,461 | 4,366,115 |
| Newfoundland, Labrador | 1,056 | 1,625 | 11,151 | 11,146 | 13,680 | 22,698 | 33,383 | 39,237 | 20,766 | 61,814 |
| Costa Rica | ..... | ..... | ..... | ..... | ..... | ..... | 363 | ..... | ..... | ..... |
| Mexico | 1,458 | ..... | ..... | 16,414 | 5,225 | 18,389 | 23,791 | 20,631 | 46,761 | 47,856 |
| Miquelon, Langley, etc. | ..... | ..... | 1,277 | 3,370 | 634 | 1,383 | 478 | 506 | ..... | ..... |
| British West Indies | 1,050 | 2,150 | 3,000 | 6,670 | 2,349 | ..... | 750 | 79,889 | 988 | 8,465 |
| Panama | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 630 |
| Cuba | ..... | 4,775 | 23,988 | 44,567 | 57,410 | 53,475 | 60,565 | 136,931 | 95,816 | 86,948 |
| Danish West Indies | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Brazil | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 219,197 | ..... |
| Columbia | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 426 |
| British Guiana | 300 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,041 | ..... |
| Dutch Guiana | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Chile | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 900 |
| Venezuela | ..... | ..... | ..... | ..... | ..... | 250 | ..... | ..... | ..... | ..... |
| Chinese Empire | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 14,507 | 60,333 | 100,800 |
| British East Indies | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Straits Settlements | ..... | ..... | ..... | ..... | ..... | ..... | 38,220 | 162,600 | 16,775 | ..... |
| Hongkong | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 120,036 | 185,153 |
| Turkey in Asia | ..... | 1,600 | ..... | ..... | ..... | 15,080 | 5,680 | 11,620 | 6,720 | 9,000 |
| Australia, Tasmania | ..... | 106 | ..... | ..... | ..... | 1,700 | ..... | 20,883 | 11,407 | 24,640 |
| New eZaland | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 7,787 |
| Hawaii | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total | 19,093,547 | 15,235,236 | 22,894,900 | 24,659,394 | 20,270,970 | 15,575,214 | 24,756,486 | 29,335,193 | 16,331,035 | 20,497,695 |

# Review of the Crude Rubber Market.

THE feature of the month has been a heavy decline in prices on all grades, but more particularly on Pará sorts. The fall in fine Pará since one month ago is 8 to 10 cents a pound. Good Congo sorts have been better maintained. Guayule rubber, which continues to come forward in good amounts, is quoted higher at the end of the month than at the beginning.

At the London auction, on December 14, about 24 tons of Plantation from Ceylon were offered, and 130 tons from Malaya. Prices were lower than a fortnight before, but at the drop competition was good and everything was sold.

THE LATEST QUOTATIONS.

Following are the quotations at New York for Pará grades, one year ago, one month ago, and December 30, the current date:

| PARA. | Jan. 1, '09. | Dec. 1, '09. | Dec. 30. |
|---|---|---|---|
| Islands, fine, new | 113@114 | 173@174 | 163@164 |
| Islands, fine, old | none here | 174@175 | none here |
| Upriver, fine, new | 121@122 | 194@195 | 180@178 |
| Upriver, fine, old | 124@125 | 195@196 | none here |
| Islands, coarse, new | 55@ 56 | 71@ 72 | @ 70 |
| Islands, coarse, old | none here | none here | none here |
| Upriver, coarse, new | 92@ 93 | 117@118 | 111@112 |
| Cametá | 61@ 62 | 82@ 83 | 79@ 80 |
| Caucho (Peruvian), ball | 83@ 84 | 105@106 | 101@102 |
| Caucho (Peruvian), sheet | 71@ 72 | none here | @ 85 |
| Ceylon, fine, sheet | 129@130 | 207@208 | 179@180 |
| Ceylon, crepe | ..... | 208@210 | 181@182 |
| AFRICAN. | | | |
| Lopori, ball, prime | 112@113 | 136@137 | 133@134 |
| Lopori, strip, prime | 86@ 87 | none here | none here |
| Aruwimi | ..... | 118@119 | 116@117 |
| Upper Congo, ball, red | ..... | 123@124 | 121@122 |
| Sierra Leone, 1st quality | 94@ 95 | 118@119 | ...@117 |
| Massai, red | 94@ 95 | 118@119 | ...@117 |
| Soudan niggers | 85@ 86 | 107@108 | ...@106 |
| Cameroon, ball | 62@ 63 | 86@ 87 | 77@ 78 |
| Benguela | 62@ 63 | 75@ 76 | ...@ 74 |
| Madagascar, pinky | 83@ 84 | 98@ 99 | 98@ 99 |
| Accra, flake | 21@ 22 | 22@ 23 | 22@ 23 |
| CENTRALS. | | | |
| Esmeralda, sausage | 81@ 82 | 99@100 | ...@100 |
| Guayaquil, strip | 69@ 70 | 84@ 85 | 84@ 85 |
| Nicaragua, scrap | 81@ 82 | 96@ 97 | 97@ 98 |
| Panama | 60@ 61 | 82@ 83 | 82@ 83 |
| Mexican, scrap | 80@ 81 | 96@ 97 | 96@ 97 |
| Mexican, slab | 58@ 60 | 82@ 83 | 82@ 83 |
| Mangabeira, sheet | 56@ 57 | 67@ 70 | 67@ 72 |
| Guayule | 30@ 33 | 59@ 60 | 60@ 63 |
| EAST INDIAN. | | | |
| Assam | 92@ 93 | 94@ 95 | 94@ 95 |
| Pontianak | ..... | 6@... | 6@6½ |
| Borneo | 35@ 45 | 55@ 64 | 55@ 64 |

Late Pará cables quote:

| | Per Kilo. | | Per Kilo. |
|---|---|---|---|
| Islands, fine | 7$600 | Upriver, fine | 10$200 |
| Islands, coarse | 2$900 | Upriver, coarse | 4$700 |
| Latest Manáos advices: | | Exchange | 15 15/32*d.* |
| Upriver, fine | 10$100 | | |
| Upriver, coarse | 7$000 | Exchange | 15½*d.* |

NEW YORK RUBBER PRICES FOR OCTOBER (NEW RUBBER).

| | | | |
|---|---|---|---|
| Upriver, fine | $2.02@2.15 | $1.03@1.13 | $0.98@1.06 |
| Upriver, coarse | 1.20@1.32 | .72@ .82 | .84@ .88 |
| Islands, fine | 1.83@2.02 | .95@1.04 | .91@ .99 |
| Islands, coarse | .72@ .82 | .47@ .54 | .56@ .59 |
| Cametá | .83@ .96 | .53@ .56 | .55@ .62 |

NEW YORK RUBBER PRICES FOR NOVEMBER (NEW RUBBER).

| | 1909. | 1908. | 1907. |
|---|---|---|---|
| Upriver, fine | 1.93@2.03 | 1.12@1.30 | .83@ .99 |
| Upriver, coarse | 1.17@1.21 | .82@1.00 | .68@ .85 |
| Islands, fine | 1.72@1.84 | 1.04@1.24 | .72@ .92 |
| Islands, coarse | .69@ .72 | .54@ .70 | .44@ .56 |
| Cameta | .80@ .84 | .56@ .72 | .42@ .56 |

## MILL ROOM COOLING TABLE.

THE cut relates to an important line of products of The Ornamental Iron Work Co. (Akron, Ohio), who specialize in metal requirements for rubber factories, having had many years of experience in this branch. Their mill room cooling tables are well constructed, with capacity from 1 to 2 tons made to any size, with two or three decks high. The top and decks are made of wire cloth, through which the air passes, cooling the rubber quickly. The chief feature of these tables is that there is not a part constructed of wood, which often clings to the rubber and is the source of a great deal of trouble, causing defective goods and unsatisfied customers. The value of the table will first be appreciated after these facts have been proved, and the advantages are shown.

THE latest indication of progress in the upper Amazon regions is the establishment of a commercial association in the prefecture of Alto Juruá, which is one of the three divisions of the federal territory of the Acre. It appears from the *Estatutos* that the interests with which the association is concerned are principally rubber, sugar, and grazing. It is planned to hold once in two years a congress of rubber workers, farmers and merchants. The headquarters are at Cruzeiro do Sul and the president is Senhor Zeferino da Silva Ramos. A list of thirty-nine members is published.

IN a recent pageant presented to represent the development of Akron, it was a problem to represent in some artistic way the india-rubber industry. The result was the invention of an "india-rubber dance," cleverly executed by Miss Helen Harter. Dressed in a black spangled costume, the dancer jumped to the stage from an electric coupe. In the steps and movements which followed were suggestively represented the resilient and rebounding properties of india-rubber. The dance attracted considerable attention.

MILL ROOM COOLING TABLE.

## *Statistics of Para Rubber (Excluding Caucho.)*

| | NEW YORK. Fine and Medium. | Coarse. | | Total 1909. | Total 1908. | Total 1907. |
|---|---|---|---|---|---|---|
| Stocks, October 31..*tons* | 130 | 86 | = | 216 | 221 | 170 |
| Arrivals, November..... | 1291 | 443 | = | 1734 | 1799 | 1331 |
| Aggregating ..... | 1421 | 529 | = | 1950 | 2020 | 1501 |
| Deliveries, November... | 1240 | 492 | = | 1732 | 1772 | 1366 |
| Stocks, November 30.. | 181 | 37 | = | 218 | 248 | 135 |
| | PARA. | | | ENGLAND. | | |
| Stocks, October 31..... | 230 | 520 | 417 | 230 | 265 | 595 |
| Arrivals, November..... | 4370 | 3230 | 2945 | 1220 | 1646 | 1411 |
| Aggregating ..... | 4600 | 3750 | 3362 | 1450 | 1911 | 2006 |
| Deliveries, November... | 3215 | 3275 | 3222 | 950 | 1775 | 1366 |
| Stocks, November 30. | 1385 | 475 | 140 | 500 | 136 | 640 |

| | 1909. | 1908. | 1907. |
|---|---|---|---|
| World's visible supply, November 30..*tons* | 3,757 | 2,362 | 2,796 |
| Pará receipts, July 1 to November 30..... | 11,830 | 11,060 | 10,615 |
| Pará receipts of Caucho, same dates..... | 1,530 | 1,370 | 1,075 |
| Afloat from Pará to United States, Nov. 30 | 839 | 700 | 893 |
| Afloat from Pará to Europe, Nov. 30..... | 815 | 654 | 988 |

## *African Rubbers.*

NEW YORK STOCKS (IN TONS).

| | | | |
|---|---|---|---|
| November 1, 1908 ..... | 134 | June 1, 1909 ..... | 156 |
| December 1 ..... | 179 | July 1 ..... | 268 |
| January 1, 1909 ..... | 156 | August 1 ..... | 130 |
| February 1 ..... | 157 | September 1 ..... | 123 |
| March 1 ..... | 200 | October 1 ..... | 67 |
| April 1 ..... | 178 | November 1 ..... | 134 |
| May 1 ..... | 268 | December 1 ..... | 134 |

## *Antwerp.*

At the inscription sale on December 16 about 530 tons were offered, of which 466 tons (including 408 of Congo sorts) found buyers at prices generally lower than at the preceding sale. A considerable quantity of Plantation rubber was included, and the prices realized showed a more marked decline than for the good Congo sorts. It is evident that Antwerp is becoming an important market for plantation rubber from the Straits Settlements and the Dutch East Indies. The offering included 34,160 kilograms from the Straits and 10,846 kilograms from Java. The next sale, about the end of January, will comprise some 500 tons.

ZELLER, VILLINGER & Co., report [December 16]:

In spite of the price of Pará fine having lowered by about 1 franc per pounds since lots sold in today's auction here were valued, the auction's result may be considered satisfactory, as prices paid average only about 4 per cent. below valuations. Practically all lots of current quality and condition have been sold; up to 15.05 francs per kilo has been paid viz., for a fine lot of prime Equateur. Next auction here will take place the second fortnight of next month and very likely include about 400 tons or so.

The Pará market has been very unsteady lately; the price for Pará fine hard cure has gone down to *7s. 3d.* at a certain moment without buyers. Since yesterday a strong upward reaction has taken place, and England telegraphs now sellers less than at *7s. 6d.* per pound.

It is very risky to say whether the lowest level has been reached at *7s. 3d.* Very much depends upon arrivals, *i. e.*, to say if the large arrivals of November and December up to now have come forward at the expense of those of the next months, or if there will really be a heavy increase of the crop. At any rate, we think manufacturers having covered their requirements lately will scarcely find themselves disappointed.

### RUBBER ARRIVALS FROM THE CONGO.

NOVEMBER 29.—By the steamer *Leopoldville:*

| | | | |
|---|---|---|---|
| Bunge & Co..... | (Société Générale Africaine) *kilos* | 72,000 | |
| Do ..... | (Comptoir Commercial Congolais) | 19,000 | |
| Do ..... | (Comite Special Katanga) | 5,600 | |
| Do ..... | (Chemins de fer Grands Lacs) | 2,800 | |
| Do ..... | (Société Abir) | 8,700 | |
| Do ..... | (Société Anversoise) | 1,300 | |
| Société Coloniale Anversoise..... | (Belge du Haut Congo) | 2,000 | |
| Do ..... | (Cie. du Kasai) | 91,900 | |
| L. & W. Van de Velde..... | | 3,000 | 206,300 |

### RUBBER STATISTICS FOR NOVEMBER.

| DETAILS. | 1909. | 1908. | 1907. | 1906. | 1905. |
|---|---|---|---|---|---|
| Stocks, Oct. 31...*kilos* | 464,831 | 662,104 | 723,816 | 621,081 | 554,483 |
| Arrivals in November. | 533,623 | 297,243 | 532,612 | 373,370 | 624,385 |
| Congo sorts ..... | 417,392 | 224,772 | 499,441 | 311,315 | 462,907 |
| Other sorts ..... | 116,231 | 72,471 | 33,171 | 62,055 | 161,478 |
| Aggregating ..... | 998,454 | 959,347 | 1,256,428 | 994,451 | 1,178,868 |
| Sales in November.... | 262,838 | 355,177 | 241,146 | 279,532 | 543,572 |
| Stocks, November 30.. | 735,616 | 604,170 | 1,015,282 | 714,919 | 635,296 |
| Arrivals since Jan. 1.. | 4,369,961 | 4,515,162 | 4,534,929 | 5,135,602 | 5,239,553 |
| Congo sorts ..... | 3,276,349 | 3,807,830 | 4,156,141 | 4,014,059 | 4,006,203 |
| Other sorts ..... | 1,093,612 | 707,332 | 678,788 | 1,121,543 | 1,233,350 |
| Sales since Jan. 1.... | 4,230,080 | 4,917,886 | 4,477,831 | 5,155,870 | 5,145,618 |

## *Rubber Receipts at Manaos.*

DURING November and five months of the crop season, for three years (courtesy of Messrs. Scholz & Co.):

| | November. | | | July-November. | | |
|---|---|---|---|---|---|---|
| FROM. | 1909. | 1908. | 1907 | 1909 | 1908. | 1907. |
| Rio Purús-Acre.....*tons* | 1,579 | 556 | 528 | 3,475 | 3,071 | 2,635 |
| Rio Maderia ..... | 310 | 289 | 259 | 1,638 | 1,464 | 1,295 |
| Rio Juruá ..... | 322 | 389 | 283 | 941 | 987 | 748 |
| Rio Javary-Iquitos..... | 480 | 331 | 420 | 1,514 | 1,227 | 1,454 |
| Rio Solimoes ..... | 225 | 256 | 216 | 465 | 509 | 611 |
| Rio Negro ..... | 76 | 13 | 27 | 90 | 19 | 30 |
| Total ..... | 2,992 | 1,834 | 1,733 | 8,123 | 7,277 | 6,773 |
| Caucho ..... | 357 | 224 | 150 | 1,533 | 1,070 | 934 |
| Total ..... | 3,349 | 2,058 | 1,883 | 9,656 | 8,347 | 7,707 |

## *Para.*

R. O. AHLERS & Co. report [December 11.]:

Since the beginning of this month prices of Island rubber have receded almost daily, while for Upriver there seems to be no demand at all at present. It must, however, be borne in mind that the now existing excess of entries (which was provoked by high prices) will soon be leveled out in January and February, as the increase on the total crop will not amount to much.

## *Liverpool.*

WILLIAM WRIGHT & Co., report [December 1]:

*Fine Pará.*—The market, generally speaking, has been active throughout the month. At the close there was a sharp break in prices for the near positions, November declined about *11d.* and December *7d.* per pound; the distant positions, however, are in good demand at full rates; in fact there have been, and are, more buyers than sellers; doubtless the large discount in price has induced some of the buying, but it seems to us that there must be a trade demand behind it, which is a factor that will have its due effect later on. Receipts are coming forward liberally, but despite this, in Brazil there is active buying at prices fully *4d.* per pound above those ruling here. There seems little doubt that we shall have at least a *7s.* [=$1.70] basis for this crop, as a drop of *3d.* to *4d.* per pound from present prices for next year's deliveries would result in heavy buying.

## OLD RUBBER SHOES IN RUSSIA.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I have just had an interview with one of the largest Russian dealers in old rubber, who expressed himself as follows:

"The outlook for the business in old rubber shoes in 1910 points to very high prices, as the supply of these goods is very small, while the entire production of Pará rubber in 1910 is reported to have been sold in advance at very high rates.

"Prices of old rubber shoes, in fact, should be high, even at this time, but as sales to America have been small during the past two years, in consequence of the financial panic, comparatively large stocks have accumulated, and the trade has been selling at any price. By this time, however, all the old stock has been disposed of, and it is now difficult to buy goods. Moreover, all the reclaiming works are working up their supplies on hand, and they will later require large amounts of old rubber shoes, which will result in a great advance in prices."

Prices of old rubber shoes may, in fact, be expected to advance very considerably in the near future, since visible supplies are very small and considerable time will have to elapse before the next season for collecting old rubber shoes opens, while the reclaiming works will soon require large supplies.

A CORRESPONDENT.

Moscow, Russia, November 28, 1909.

## *Rubber Scrap Prices.*

LATE New York quotations—prices paid by consumers for carload lots, per pound—show a slight decline since last month:

| | |
|---|---|
| Old rubber boots and shoes—domestic.. | 10½@10⅝ |
| Old rubber boots and shoes—foreign... | 9¼@ 9⅜ |
| Pneumatic bicycle tires..... | 7 @ 7⅛ |
| Automobile tires ..... | 7½@ 7¾ |
| Solid rubber wagon and carriage tires.. | 9⅜@ 9½ |
| White trimmed rubber ..... | 10 @11 |
| Heavy black rubber..... | 6½@ 6¾ |
| Air brake hose ..... | 5 @ 5¼ |
| Garden hose ..... | 2⅞@ 3 |
| Fire and large hose ..... | 3¼@ 3⅜ |
| Matting ..... | 1⅞@ 2 |

## IMPORTS FROM PARA AT NEW YORK.

*[The Figures Indicate Weight in Pounds.]*

Nov. 26.—By the steamer *Benedict*, from Manáos Pará:

| IMPORTERS. | Fine. | Medium. | Coarse. | Caucho. | Total. |
|---|---|---|---|---|---|
| General Rubber Co..... | 448,200 | 65,300 | 81,900 | 3,200= | 598,600 |
| New York Commercial Co.. | 259,600 | 55,600 | 103,000 | 36,700= | 454,900 |
| Poel & Arnold..... | 187,700 | 20,200 | 83,400 | 3,300= | 294,600 |
| A. T. Morse & Co..... | 63,000 | 3,900 | 80,500 | 8,500= | 155,900 |
| Hagemeyer & Brunn..... | 11,500 | 300 | 11,900 | ....= | 23,700 |
| G. Amsinck & Co..... | 1,100 | .... | 1,300 | ....= | 2,400 |
| Edmund Reeks & Co..... | .... | .... | .... | 1,500= | 1,500 |
| TOTAL ..... | 971,100 | 145,300 | 362,000 | 53,200= | 1,531,600 |

Dec. 7.—By the steamer *Dunstan*, from Manáos Pará:

| | | | | | |
|---|---|---|---|---|---|
| General Rubber Co..... | 496,000 | 94,500 | 116,600 | 25,500= | 732,600 |
| Poel & Arnold..... | 286,100 | 37,400 | 134,100 | 61,500= | 519,100 |
| New York Commercial Co.. | 201,800 | 52,700 | 48,400 | 43,300= | 346,200 |
| A. T. Morse & Co..... | 112,700 | 2,600 | 86,300 | ....= | 201,600 |
| Hagemeyer & Brunn..... | 37,500 | 2,500 | 13,200 | ....= | 53,200 |
| G. Amsinck & Co..... | 14,300 | 3,900 | 1,400 | 19,100= | 38,700 |
| Edmund Reeks & Co..... | 6,800 | 1,800 | .... | ....= | 8,600 |
| TOTAL ..... | 1,155,200 | 195,400 | 400,000 | 149,400= | 1,900,000 |

Dec. 15.—By the steamer *Cearense*, from Manáos and Pará:

| | | | | | |
|---|---|---|---|---|---|
| General Rubber Co..... | 528,900 | 91,400 | 158,400 | 23,900= | 802,600 |
| New York Commercial Co.. | 251,500 | 71,800 | 90,400 | 27,500= | 441,200 |
| Poel & Arnold..... | 284,900 | 26,900 | 101,200 | 20,000= | 433,000 |
| A. T. Morse & Co..... | 29,300 | .... | 87,800 | 20,600= | 137,700 |
| Hagemeyer & Brunn..... | 27,500 | 1,800 | 25,700 | ....= | 55,000 |
| C. P. dos Santos..... | 22,500 | 1,100 | 4,600 | ....= | 28,200 |
| Edmund Reeks & Co..... | 8,200 | 2,500 | 10,600 | ....= | 21,300 |
| L. Johnson & Co..... | .... | .... | 9,900 | ....= | 9,900 |
| TOTAL ..... | 1,152,800 | 195,500 | 488,600 | 92,000= | 1,928,900 |

## PARA RUBBER VIA EUROPE.

POUNDS.

Nov. 22.—By the *Caronia*=Liverpool:

| | | |
|---|---|---|
| New York Commer. Co. (Fine) | 38,000 | |
| General Rubber Co (Fine).... | 31,000 | 69,000 |

Nov. 26.—By the *Mauretania*=Liverpool:

| | | |
|---|---|---|
| General Rubber Co. (Fine).... | 50,000 | |
| New York Commer. Co (Fine) | 9,000 | |
| Livesey & Co. (Fine)..... | 5,500 | 64,500 |

Nov. 26.—By the *Waldersee*=Hamburg:

| | | |
|---|---|---|
| A. T. Morse & Co (Fine).... | 27,000 | |
| New York Comm. Co. (Coarse) | 11,000 | 38,000 |

Nov. 29.—By the *Baltic*=Liverpool:

| | | |
|---|---|---|
| Poel & Arnold (Fine)..... | | 22,500 |

Dec. 3.—By the *Lusitania*=Liverpool:

| | | |
|---|---|---|
| General Rubber Co (Coarse).. | 29,000 | |
| Livesey & Co. (Coarse)..... | 7,000 | 36,000 |

Dec. 7.—By the *Arabic*=Liverpool:

| | | |
|---|---|---|
| New York Commer. Co. (Fine)..... | | 11,500 |

Dec. 7.—By the *Bulgaria*=Hamburg:

| | | |
|---|---|---|
| New York Commer. Co. (Fine)..... | | 7,000 |

Dec. 8.—By the *Allianca*=Mollendo:

| | | |
|---|---|---|
| W. R. Grace & Co (Coarse)..... | | 13,500 |

Dec. 9.—By the *Majestic*=London:

| | | |
|---|---|---|
| Poel & Arnold (Coarse)..... | | 9,000 |

Dec. 11.—By the *Campania*=Liverpool:

| | | |
|---|---|---|
| New York Commer. Co. (Fine) | 67,000 | |
| General Rubber Co (Fine).. | 30,000 | |
| Livesey & Co (Fine)..... | 11,500 | |
| General Rubber Co. (Coarse).. | 11,000 | 119,500 |

Dec. 13.—By the *Celtic*=Liverpool:

| | | |
|---|---|---|
| New York Commer. Co. (Fine) | 22,500 | |
| New York Comm. Co. (Caucho) | 56,000 | 78,500 |

Dec. 16.—By the *Grant*=Hamburg:

| | | |
|---|---|---|
| New York Commer. Co. (Fine) | 15,000 | |
| New York Comm. Co. (Coarse) | 5,000 | 20,000 |

Dec. 20.—By the *Cymric*=Liverpool:

| | | |
|---|---|---|
| New York Commer. Co. (Fine) | 150,000 | |
| Poel & Arnold (Coarse)..... | 22,500 | |
| Poel & Arnold (Caucho)..... | 75,000 | |
| Livesey & Co. (Caucho)..... | 22,500 | |
| Raw Products Co. (Fine).... | 7,000 | 277,000 |

Dec. 20.—By the *Minneapolis*=London:

| | | |
|---|---|---|
| General Rubber Co. (Coarse)..... | | 11,000 |

Dec. 21.—By the *Napo*=Iquitos:

| | | |
|---|---|---|
| Edmund Reeks & Co (Caucho) | 10,000 | |
| C. Ahrenfeldt Sons (Caucho).. | 8,000 | 18,000 |

## OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

Nov. 22.—By the *Corsican*=Bahia:

| | | |
|---|---|---|
| New York Commercial Co.... | 27,000 | |
| A. Hirsch & Co..... | 6,000 | 33,000 |

Nov. 22.—By *El Mar*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co..... | | 110,000 |

Nov. 22.—By the *Colon*=Colon:

| | | |
|---|---|---|
| G. Amsinck & Co..... | 12,500 | |
| Andean Trading Co..... | 3,500 | |
| J. Sambrada & Co..... | 3,000 | |
| Isaac Brandon & Bros..... | 2,500 | |
| Piza, Nephews & Co..... | 3,000 | |
| Demarest Bros..... | 1,500 | |
| Eggers & Heinlein..... | 1,500 | |
| National Machine Co..... | 1,000 | 28,500 |

Nov. 23.—By the *Tennyson*=Bahia:

| | | |
|---|---|---|
| J. H. Rossback Bros..... | 27,000 | |
| A. D. Hitch & Co..... | 18,000 | |
| New York Commercial Co.... | 13,500 | |
| Poel & Arnold..... | 13,000 | 71,500 |

Nov. 23.—By the *Vaderland*=Antwerp:

| | | |
|---|---|---|
| Poel & Arnold ..... | | *33,500 |

Nov. 24.—By *El Alba*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co..... | | *55,000 |

Nov. 26.—By the *Tagus*=Colombia:

| | | |
|---|---|---|
| A. M. Capen's Sons ..... | 5,500 | |
| Gravenhorst & Co..... | 3,500 | |
| Brandon & Bros..... | 2,500 | |
| L. Hagenaers & Co..... | 2,500 | |
| Fruit Despatch Co..... | 1,500 | |
| Suzarte & Whitney ..... | 1,500 | 17,000 |

Nov. 26.—By the *Hugin*=Tampico:

| | | |
|---|---|---|
| Ed. Maurer ..... | *150,000 | |
| New York Commercial Co.... | *80,000 | |
| Poel & Arnold..... | *55,000 | *285,000 |

Nov. 26.—By *El Norte*=New Orleans:

| | | |
|---|---|---|
| A. T. Morse & Co..... | 3,500 | |
| Eggers & Heinlein..... | 1,000 | 4,500 |

Nov. 27.—By the *Merida*=Mexico:

| | | |
|---|---|---|
| H. Marquardt & Co..... | 6,000 | |
| Harburger & Stack ..... | 2,500 | |
| E. Steiger & Co..... | 1,500 | |
| American Trading Co..... | 1,000 | 11,000 |

Dec. 2.—By the *Proteus*=New Orleans:

| | | |
|---|---|---|
| A. T. Morse & Co..... | 3,000 | |
| Manhattan Rubber Co..... | 3,000 | |
| West Coast Rubber Co..... | 1,500 | 7,500 |

Dec. 1.—By the *Baltic*=Liverpool:

| | | |
|---|---|---|
| Rubber Trading Co..... | | 22,500 |

Dec. 3.—By the *Matanzas*=Tampico:

| | | |
|---|---|---|
| Ed. Maurer ..... | *45,000 | |
| New York Commercial Co.... | *33,000 | |
| Poel & Arnold..... | *29,000 | *107,000 |

Dec. 3.—By the *Panama*=Colon:

| | | |
|---|---|---|
| Isaac Brandon & Bros..... | 13,500 | |
| G. Amsinck & Co..... | 6,000 | |
| J. Sambrada & Co..... | 5,500 | |
| Mecke & Co..... | 5,000 | |
| Piza, Nephews & Co..... | 5,000 | |
| Dumarest Bros. & Co..... | 2,500 | |
| Andean Trading Co..... | 3,000 | |
| American Trading Co..... | 1,000 | |
| Bartluco & De Leon..... | 1,000 | |
| Meyer & Hecht..... | 1,000 | 43,500 |

Dec. 4.—By *El Monte*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co..... | | *225,000 |

Dec. 4.—By the *Sigismund*=Colombia:

| | | |
|---|---|---|
| Maitland, Coppell Co..... | 4,500 | |
| Kunhardt & Co..... | 3,500 | 8,000 |

Dec. 4.—By the *Esperanza*=Mexico:

| | | |
|---|---|---|
| Harburger & Stack..... | 4,500 | |
| E. Steiger & Co..... | 1,500 | |
| W. L. Wadleigh..... | 1,000 | 7,000 |

Dec. 4.—By the *Yumuri*=Tampico:

| | | |
|---|---|---|
| Ed. Maurer ..... | *70,000 | |
| For Akron, Ohio..... | *80,000 | |
| New York Commercial Co.... | *33,000 | |
| Rosing Bros. Co..... | *4,500 | *187,500 |

Dec. 6.—By *El Dorado*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co. | *110,000 | |
| E. Boehringer ..... | *5,500 | *115,500 |

Dec. 6.—By the *Lapland*=Antwerp:

| | | |
|---|---|---|
| Poel & Arnold..... | | *15,000 |

Dec. 8.—By the *Alliance*=Colon:

| | | |
|---|---|---|
| G. Amsinck & Co..... | 10,000 | |
| Mecke & Co..... | 3,500 | |
| Dumarest Bros. & Co..... | 2,000 | |
| W. L. Gough Co..... | 2,000 | |
| A. Rosenthal's Sons..... | 1,500 | |
| J. Sambrada & Co..... | 1,500 | |
| Harburger & Stack..... | 1,000 | 21,500 |

Dec. 8.—By *El Valle*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co..... | | *190,000 |

Dec. 9.—By the *Oruba*=Colombia:

| | | |
|---|---|---|
| L. Hagenaers & Co..... | 8,000 | |
| Maitland, Coppell Co..... | 5,000 | |
| Suzarte & Whitney..... | 1,000 | 14,000 |

Dec. 9.—By the *Voltaire*=Bahia:

| | | |
|---|---|---|
| A. Hirsch & Co..... | 22,500 | |
| J. H. Rossback & Co..... | 3,500 | 26,000 |

Dec. 9.—By the *Sibiria*=Greytown:

| | | |
|---|---|---|
| G. Amsinck & Co..... | 2,000 | |
| L. Johnson & Co..... | 2,000 | |
| Isaac Brandon & Bros..... | 2,000 | 6,000 |

Dec. 9.—By the *Antilles*=New Orleans:

| | | |
|---|---|---|
| Manhattan Rubber Co..... | 4,000 | |
| G. Amsinck & Co..... | 2,500 | |
| A. N. Rotholz ..... | 2,500 | |
| Eggers & Heinlein..... | 1,500 | 10,500 |

Dec. 10.—By the *Morro Castle*=Mexico:

| | | |
|---|---|---|
| Harburger & Stack..... | 3,000 | |
| George A. Alden & Co..... | 1,500 | |
| E. N. Tibbals & Co..... | 1,000 | 5,500 |

Dec. 14.—By the *Prins August*=Colon:

| | | |
|---|---|---|
| A. Santos & Co..... | 6,500 | |
| New York Commercial Co.... | 5,000 | |
| Roldan & Van Sickle..... | 1,500 | |
| Pablo, Calvet & Co..... | 1,000 | |
| G. Amsinck & Co..... | 1,000 | |
| Isaac Brandon & Bros..... | 1,000 | *16,000 |

Dec. 15.—By the *Proteus*=New Orleans:

| | | |
|---|---|---|
| A. T. Morse & Co..... | | 3,500 |

Dec. 15.—By the *Colon*=Colon:

| | | |
|---|---|---|
| Isaac Brandon & Bros..... | 18,500 | |
| Andean Trading Co..... | 5,000 | |
| New York Commercial Co.... | 4,500 | |
| Dumarest Bros. & Co..... | 3,000 | |
| G. Amsinck & Co..... | 2,000 | |
| Piza, Nephews & Co..... | 1,500 | |
| Henry Mann & Co..... | 1,500 | 36,000 |

Dec. 16.—By *El Norte*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co. | *55,000 | |
| E. Boehringer..... | *10,000 | *65,000 |

Dec. 17.—By the *Tergipe*=Pernambuco:

| | | |
|---|---|---|
| A. D. Hitch & Co..... | | 8,000 |

Dec. 17.—By the *Frederick*=Colombia:

| | | |
|---|---|---|
| A. Held ..... | 2,500 | |
| L. Hagenaers Co..... | 2,000 | |
| Cabello & Blacho..... | 1,000 | 5,500 |

Dec. 17.—By the *Grant*=Hamburg:

| | | |
|---|---|---|
| Rubber Trading Co..... | | 13,500 |

Dec. 17.—By the *Thespis*=Bahia:

| | | |
|---|---|---|
| New York Commercial Co..... | 22,500 | |
| A. Hirsch & Co..... | 15,000 | |
| A. D. Hitch & Co..... | 13,500 | 51,000 |

Dec. 18.—By *El Siglo*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co..... | | *75,000 |

Dec. 20.—By the *Manzanillo*=Tampico:

| | | |
|---|---|---|
| Ed. Maurer ..... | *140,000 | |
| Poel & Arnold..... | *50,000 | |
| New York Commercial Co.... | *33,000 | *223,000 |

Dec. 20—By the *Zeeland*=Antwerp:

| | | |
|---|---|---|
| Poel & Arnold..... | | *33,000 |

Dec. 20.—By the *Cymric*=Liverpool:

| | | |
|---|---|---|
| Livesey & Co..... | | 8,000 |

Dec. 21.—By the *Advance*=Colon:

| | | |
|---|---|---|
| New York Commercial Co..... | 15,500 | |
| J. Sambrada & Co..... | 4,000 | |
| J. H. Rossback & Bros..... | 5,000 | |
| G. Amsinck & Co..... | 4,000 | |
| American Trading Co..... | 2,000 | |
| L. Johnson & Co..... | 2,000 | |
| L. Hagenaers Co..... | 1,500 | |
| Thos. N. Morgan..... | 1,500 | |
| Silva Busenus Co..... | 1,500 | |
| Wessels, Kulenkampfff & Co.. | 1,500 | |
| A. Rosenthal's Sons..... | 1,500 | |
| A. M. Capen's Sons..... | 1,000 | |
| Jose Julia & Co..... | 1,000 | 42,000 |

Dec. 23.—By *El Rio*=Galveston:

| | | |
|---|---|---|
| Continental-Mexican Rubber Co..... | | *165,000 |

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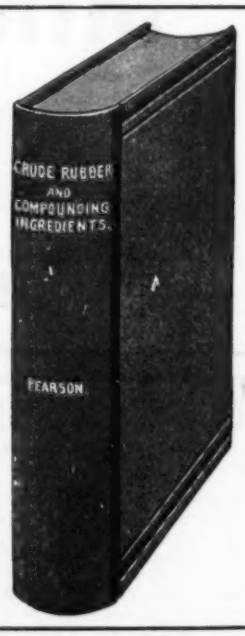
**The India Rubber Publishing Company** 395 BROADWAY NEW YORK

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### AFRICAN.

| | | POUNDS. |
|---|---|---|
| Nov. 20.—By the *Hudson*=Havre: | | |
| Joseph Cantor | | 11,500 |
| Nov. 22.—By the *Caronia*=Liverpool: | | |
| H. A. Gould Co. | 22,500 | |
| Poel & Arnold | 11,500 | |
| Livesey & Co. | 5,500 | 39,500 |
| Nov. 22.—By the *Pennsylvania*=Hamburg: | | |
| George A. Alden & Co. | 27,000 | |
| A. T. Morse & Co. | 22,500 | |
| W. L. Gough Co. | 10,000 | 59,500 |
| Nov. 23.—By the *Winifreda*=Lisbon: | | |
| General Rubber Co. | | 110,000 |
| Nov. 23.—By the *Vaderland*=Antwerp: | | |
| A. T. Morse & Co. | 13,500 | |
| W. H. Stiles & Co. | 4,500 | 18,000 |
| Nov. 26.—By the *Teutonic*=Havre: | | |
| Livesey & Co. | 11,000 | |
| A. T. Morse & Co. | 4,500 | 15,500 |
| Nov. 26.—By the *Mauretania*=Liverpool: | | |
| Livesey & Co. | 5,000 | |
| H. A. Gould Co. | 4,500 | |
| Raw Products Co. | 4,000 | |
| General Rubber Co. | 3,500 | 17,000 |
| Nov. 26.—By the *Waldersee*=Hamburg: | | |
| Poel & Arnold | 35,000 | |
| A. T. Morse & Co. | 13,500 | |
| W. L. Gough Co. | 5,500 | 54,000 |
| Nov. 30.—By the *Kroonland*=Antwerp: | | |
| A. T. Morse & Co. | 11,500 | |
| W. L. Gough Co. | 10,000 | |
| Robinson & Co. | 6,500 | |
| Nov. 30.—By the *Baltic*=Liverpool: | | |
| George A. Alden & Co. | 45,000 | |
| General Rubber Co. | 15,000 | 6,000 |
| Dec. 3.—By the *Lusitania*=Liverpool: | | |
| George A. Alden & Co. | 11,500 | |
| Livesey & Co. | 11,000 | |
| W. L. Gough Co. | 4,500 | |
| Poel & Arnold | 2,500 | 29,500 |
| Dec. 6.—By the *New York*=London: | | |
| A. T. Morse & Co. | | 11,500 |
| Dec. 6.—By the *Amerika*=Hamburg: | | |
| A. T. Morse & Co. | 28,000 | |
| Rubber Trading Co. | 11,000 | |
| George A. Alden & Co. | 7,000 | 46,000 |
| Dec. 6.—By the *Lapland*=Antwerp: | | |
| George A. Alden & Co. | 70,000 | |
| A. T. Morse & Co. | 38,000 | |
| W. L. Gough Co. | 5,500 | |
| Raw Products Co. | 3,500 | 117,000 |
| Dec. 7.—By the *Arabic*=Liverpool: | | |
| George A. Alden & Co. | 18,000 | |
| Rubber Trading Co. | 8,500 | |
| Robinson & Co. | 11,000 | |
| General Rubber Co. | 5,000 | 42,500 |
| Dec. 7.—By the *Bulgaria*=Hamburg: | | |
| A. T. Morse & Co. | 30,000 | |
| Rubber Trading Co. | 5,500 | |
| George A. Alden & Co. | 3,500 | 39,000 |
| Dec. 11.—By the *Auchcoag*=Lisbon: | | |
| A. T. Morse & Co. | | 11,500 |
| Dec. 11.—By the *Carpania*=Liverpool: | | |
| Poel & Arnold | 20,000 | |
| Livesey & Co. | 5,500 | |
| Robinson & Co. | 3,500 | 29,000 |
| Dec. 13.—By the *Celtic*=Liverpool: | | |
| Robinson & Co. | 6,500 | |
| Raw Products Co. | 4,500 | |
| Rubber Trading Co. | 4,000 | 15,000 |
| Dec. 15.—By the *California*=Bordeaux: | | |
| George A. Alden & Co. | 38,000 | |
| General Rubber Co. | 22,500 | |
| Livesey & Co. | 5,000 | 65,500 |
| Dec. 16.—By the *Grant*=Hamburg: | | |
| George A. Alden & Co. | 25,000 | |
| General Rubber Co. | 27,000 | |
| A. T. Morse & Co. | 22,500 | |
| W. L. Gough Co. | 4,500 | 79,000 |
| Dec. 18.—By the *Andalusia*=Hamburg: | | |
| Poel & Arnold | 56,000 | |
| Rubber Trading Co. | 15,000 | 71,000 |
| Dec. 20.—By the *Florida*=Havre: | | |
| Poel & Arnold | 115,000 | |
| George A. Alden & Co. | 45,000 | |
| W. L. Gough Co. | 9,000 | 169,000 |
| Dec. 20.—By the *Victoria*=Hamburg: | | |
| A. T. Morse & Co. | 40,000 | |
| General Rubber Co. | 22,500 | |
| George A. Alden & Co. | 35,000 | |
| Poel & Arnold | 13,500 | |
| W. L. Gough Co. | 11,500 | 122,500 |
| Dec. 20.—By the *Cymric*=Liverpool: | | |
| Poel & Arnold | 45,000 | |
| George A. Alden & Co. | 40,000 | |
| A. T. Morse & Co. | 40,000 | |
| Rubber Trading Co. | 13,500 | |
| Raw Products Co | 2,500 | 141,000 |
| Dec. 22.—By the *Delphina*=Lisbon: | | |
| A. T. Morse & Co. | | 34,000 |

### EAST INDIAN.

[*Denotes plantation rubber.]

| | | POUNDS. |
|---|---|---|
| Nov. 20.—By the *Minetonka*=Toulon: | | |
| A. T. Morse & Co. | | *25,000 |
| Nov. 26.—By the *Teutonic*=London: | | |
| New York Commercial Company | | *10,000 |
| Nov. 25.—By the *Hudson*=Singapore: | | |
| Poel & Arnold | 11,000 | |
| W. L. Gough Co. | 7,000 | |
| George A. Allen Co. | 7,000 | 25,000 |
| Nov. 27.—By the *Minewaska*=London: | | |
| General Rubber Co. | *15,000 | |
| A. T. Morse & Co. | *3,500 | *18,500 |
| Nov. 29.—By the *Karouga*=Colombo: | | |
| New York Commercial Co. | *17,000 | |
| A. T. Morse & Co. | *25,000 | *42,000 |
| Nov. 30.—By the *Kroonland*=Antwerp: | | |
| A. S. Morse & Co. | | 5,000 |
| Dec. 3.—By the *Adriatic*=London: | | |
| Poel & Arnold | *27,000 | |
| A. T. Morse & Co. | *22,000 | |
| New York Commercial Co. | *20,000 | |
| Poel & Arnold | 33,000 | *102,000 |
| Dec. 6.—By the *New York*=London: | | |
| New York Commercial Co. | | *56,000 |
| New York Commercial Co. | | *56,000 |
| Dec. 6.—By the *Lapland*=Antwerp: | | |
| New York Commercial Co. | *51,000 | |
| Raw Products Co. | *3,500 | *54,500 |
| Dec. 6.—By the *Minehaha*=London: | | |
| General Rubber Co. | *11,500 | |
| A. T. Morse & Co. | *11,000 | *22,560 |
| Dec. 7.—By the *Bulgaria*=Hamburg: | | |
| W. L. Gough Co. | | 7,000 |
| Dec. 7.—By the *Indrapura*=Singapore: | | |
| Heabler & Co. | 30,000 | |
| Poel & Arnold | 10,000 | |
| W. L. Gough Co. | 10,000 | |
| George A. Alden & Co. | 9,000 | |
| O. Isenstein & Co. | 11,000 | 70,000 |
| Dec. 9.—By the *Majestic*=London: | | |
| Poel & Arnold | *25,000 | |
| A. T. Morse & Co. | *5,000 | *30,000 |
| Dec. 11.—By the *St. Louis*=London: | | |
| A. T. Morse & Co. | | *30,000 |
| Dec. 15.—By the *Mesaba*=London: | | |
| Robinson & Co. | 22,500 | |
| New York Commercial Co. | *5,500 | |
| Raw Products Co. | *4,500 | 32,500 |
| Dec. 17.—By the *Katybun*=Colombo: | | |
| New York Commercial Co. | *15,500 | |
| A. T. Morse & Co. | *15,000 | *30,500 |
| Dec. 18.—By the *Philadelphia*=London: | | |
| Poel & Arnold | *35,000 | |
| A. T. Morse & Co. | *22,500 | |
| New York Commercial Co. | *11,500 | *69,000 |
| Dec. 20.—By the *Minneapolis*=London: | | |
| A. T. Morse & Co. | *22,500 | |
| General Rubber Co. | 38,000 | 60,500 |
| Dec. 21.—By the *Moltefels*=Colombo: | | |
| A. T. Morse & Co. | | *4,500 |

### GUTTA-JELUTONG.

| | | POUNDS. |
|---|---|---|
| Nov. 26.—By the *Hudson*=Singapore: | | |
| N. Joachimson | 150,000 | |
| Heabler & Co. | 325,000 | |
| W. L. Gough Co. | 250,000 | |
| Poel & Arnold | 75,000 | |
| George A. Alden & Co. | 55,000 | 855,000 |
| Dec. 7.—By the *Indrapura*=Singapore: | | |
| Heabler & Co. | 550,000 | |
| Poel & Arnold | 200,000 | |
| W. L. Gough Co. | 225,000 | |
| George A. Alden & Co. | 80,000 | |
| N. Joachimson | 110,000 | 1,165,000 |

### BALATA.

| | | |
|---|---|---|
| Nov. 20.—By the *Korona*=Demerara: | | |
| Ed. Maurer | | 11,500 |
| Nov. 26.—By the *Maracas*=Trinidad: | | |
| G. Amsinck & Co. | 11,500 | |
| C. Tennant Sons & Co. | 3,000 | 14,500 |
| Dec. 6.—By the *Parina*=Demerara: | | |
| Ed. Maurer | 5,500 | |
| George A. Alden & Co. | 2,000 | 7,500 |
| Dec. 7.—By the *Marowyn*=Trinidad: | | |
| R. Fabien & Co. | | 7,000 |
| Dec. 14.—By the *Coppename*=Demerara: | | |
| Ed. Maurer | 3,000 | |
| J. A. Pauli & Co. | 4,500 | 7,500 |
| Dec. 16.—By the *Guiana*=Demerara: | | |
| Ed. Maurer | 3,500 | |
| Frame & Co. | 3,000 | 6,500 |

### GUTTA-PERCHA.

| | | |
|---|---|---|
| Nov. 26.—By the *Hudson*=Singapore: | | |
| O. Isenstein & Co. | 35,000 | |
| Heabler & Co. | 40,000 | 75,000 |
| Dec. 7.—By the *Indrapura*=Singapore: | | |
| O. Isenstein & Co. | 13,500 | |
| George A. Alden & Co. | 11,500 | |
| Heabler & Co. | 30,000 | |
| In Transit | 56,000 | 111,000 |
| Dec. 16.—By the *Grant*=Hamburg: | | |
| E. Oppenheim | | 20,000 |

## BOSTON ARRIVALS.

| | | |
|---|---|---|
| Nov. 4.—By the *Lothian*=Singapore: | | |
| Heabler & Co. (Jelutong) | 255,000 | |
| George A. Alden & Co. | 225,000 | 480,000 |
| Nov. 8.—By the *Sagamore*=Liverpool: | | |
| Poel & Arnold (African) | | 22,500 |
| Nov. 11.—By the ? =Liverpool: | | |
| Poel & Arnold (African) | | 22,500 |
| Nov. 19.—By the *Michigan*=Liverpool: | | |
| Livesey & Co. | | 45,000 |
| Nov. 23.—By the *Sachem*=Liverpool: | | |
| Poel & Arnold (African) | | 102,000 |

## PARA EXPORTS OF INDIA-RUBBER, NOVEMBER, 1909 (IN KILOGRAMS).

| EXPORTERS. | NEW YORK. Fine. | Medium. | Coarse. | Caucho. | TOTAL. | EUROPE. Fine. | Medium. | Coarse. | Caucho. | TOTAL. | TOTAL. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gruner & Co. | 157,329 | 22,044 | 87,149 | 15,303 | 281,825 | 134,101 | 23,692 | 37,384 | 11,576 | 206,753 | 488,578 |
| Adelbert H. Alden | 106,837 | 21,374 | 47,652 | 21,025 | 196,888 | 72,144 | 13,351 | 24,032 | 9,090 | 118,617 | 315,505 |
| E. Pinto Alves & Co. | 31,960 | ..... | 73,260 | ..... | 105,220 | 80,920 | ..... | 5,940 | 9,240 | 96,100 | 201,320 |
| J. Marques & Co. | 49,257 | 3,447 | 7,538 | ..... | 60,242 | 29,410 | 4,930 | 13,860 | ..... | 48,200 | 108,442 |
| Gordon & Co. | 56,696 | 8,074 | 21,237 | 644 | 86,651 | ..... | ..... | ..... | ..... | ..... | 86,651 |
| R. O. Ahlers & Co. | 2,012 | ..... | ..... | 4,261 | 6,273 | 49,268 | ..... | 6,596 | 8,841 | 64,705 | 70,978 |
| Scholz, Hartje & Co. | 17,000 | 1,530 | 8,910 | ..... | 27,440 | 17,340 | 1,360 | 5,940 | ..... | 24,640 | 52,080 |
| Pires, Teixeira & Co. | 8,330 | ..... | 5,670 | ..... | 13,940 | 15,300 | ..... | 9,900 | ..... | 25,200 | 39,140 |
| R. Suarez & Co. | ..... | ..... | ..... | ..... | ..... | 17,172 | 480 | 1,030 | 13,980 | 32,662 | 32,662 |
| G. A. de Miranda Co. | 6,800 | 7,870 | 660 | 9,570 | 18,900 | ..... | ..... | ..... | ..... | ..... | 18,900 |
| Sundries | 510 | ..... | 660 | ..... | 1,170 | 9,350 | 340 | 8,580 | ..... | 18,270 | 19,440 |
| Itacoatiara, direct | ..... | ..... | ..... | ..... | ..... | 10,600 | 2,491 | 9,387 | 421 | 22,949 | 22,949 |
| Manaos, direct | 838,636 | 145,055 | 205,548 | 66,558 | 1,255,797 | 516,201 | 99,449 | 76,706 | 74,237 | 766,593 | 2,022,390 |
| Iquitos, direct | 2,817 | ..... | 4,438 | 2,482 | 9,737 | 257,737 | 20,210 | 94,990 | 76,335 | 449,272 | 459,009 |
| Total | 1,278,184 | 203,394 | 462,662 | 119,843 | 2,064,083 | 1,209,593 | 166,303 | 294,345 | 203,720 | 1,873,961 | 3,938,044 |

INDIA RUBBER WORLD
CAOUTCHOUC GUTTA-PERCHA

Vol. 41. JANUARY 1, 1910. No. 4.

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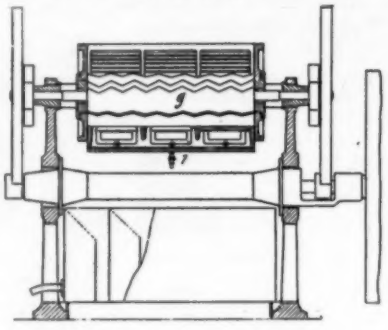
## A NEW TYPE OF WASHING MACHINE.

A MACHINE for washing india-rubber and gutta-percha which is somewhat insufficiently described in the patent specification, is shown in the accompanying illustration. It consists

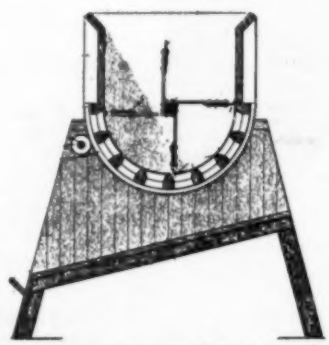


NEW TYPE OF WASHING MACHINE.

of a pair of rolls with a concave bottom section beneath each roll, the whole in an enclosing tank. In other words, it is apparently a washer built very much like a two-roll masticator. It is patented in the United States (Nos. 935,849-936,635) by Fritz Kemptor, of Stuttgart, Germany.

### THEFTS FROM A RUBBER FACTORY.

THE discovery has been made that the Continental Caoutchouc und Guttapercha Compagnie (Hanover) have been the victims of extensive robberies and defalcations. The thieves, who have been at work for a consderable time past, have stolen considerable amounts of rubber goods of every description, although they appear to have given the preference to bicycle supplies and pneumatic tires for motorcycles. They disposed of their booty by selling it to bicycle dealers. The band of robbers was composed of workmen in the company's night shift. The fact that several of the thieves spent a great deal more money than their earnings warranted led to the discovery of the thefts. The men were watched, and it was found that their knowledge of the works was exceedingly useful to them. They removed the stolen goods from the works through a secret passage, unseen by the doorkeeper, who would otherwise have barred their way. Six persons, all of whom have been arrested, were concerned in the thefts. A book kept by one of the members of the gang shows that the thieves were doing a flourishing business. The goods taken and disposed of were regularly entered in the book, which is consequently a rather important item of evidence in the hands of the police. A large lot of the stolen goods which had not as yet been sold was recovered by the detective bureau.—*Gummi-Zeitung.*



WASHING APPARATUS FOR RECLAIMED RUBBER.
[Patented by William A. Köneman, Milwaukee, Wisconsin.]

WILLIAM T. BAIRD, President ROBERT B BAIRD, Vice-President

# RUBBER TRADING COMPANY

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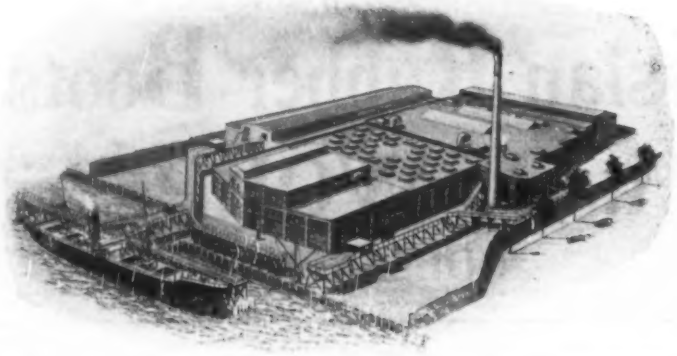

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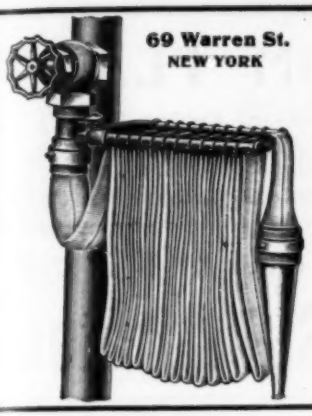

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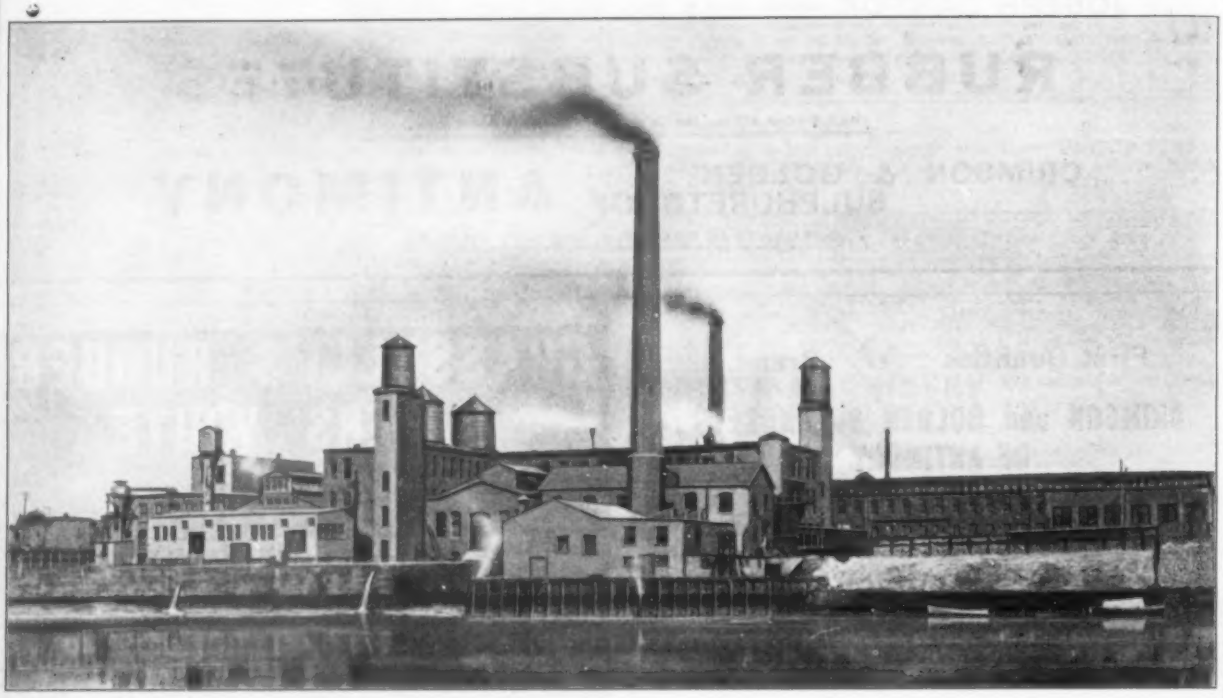

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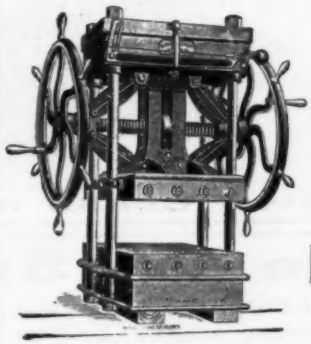

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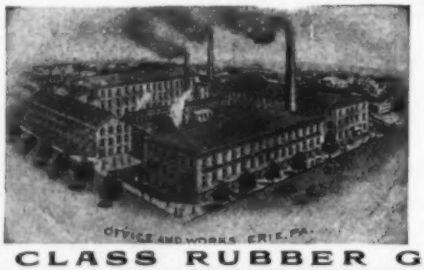


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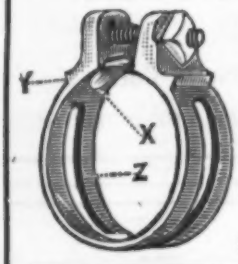


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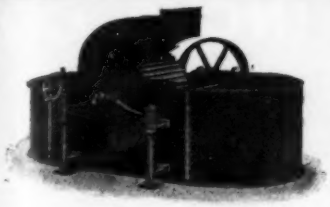
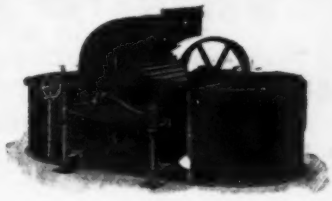


# TUB WASHERS



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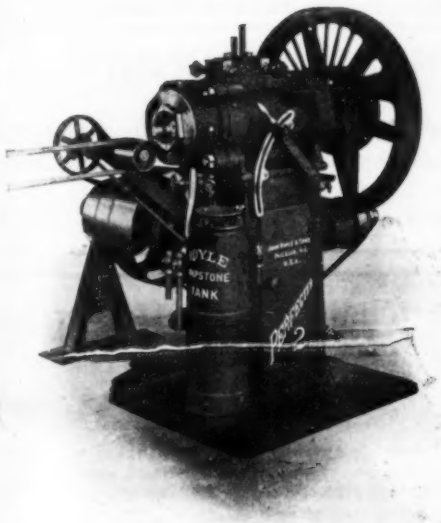

is offered for soapstoning purposes with the Royle Perfected Tubing Machine.

It includes a receptacle for holding the powder, conducting channels to the interior of the fixtures forming the tubing, and an adjustable apron for carrying the fresh product to a suitable receiver.

It embodies a logical and efficient method of soapstoning thin-wall tubing.

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**Tubing Machines, Insulating Machines, Circular Looms, built in many types and sizes.**

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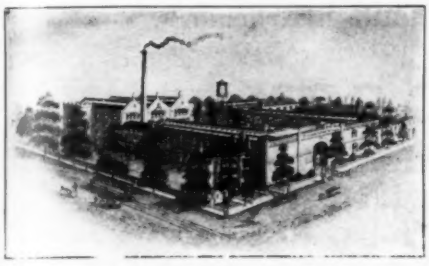

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There are no corner rods, which makes the opening more accessible.

A time and money saver. Write for Bulletin 18, which tells all about it.

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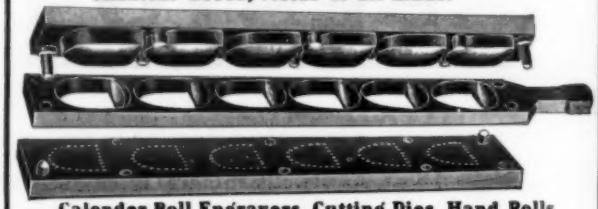

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**WASHING, GRINDING AND RECLAIMING SOLICITED**

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**SUBLIMED WHITE LEAD**

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**SUPERIOR PRODUCTS**

**Now on the market at prices making them available to all Rubber Manufacturers of high class goods.**

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**DIXON'S FLAKE GRAPHITE**

Scientific test and practical use have determined Dixon's to be the foremost lubricating graphite the world produces.

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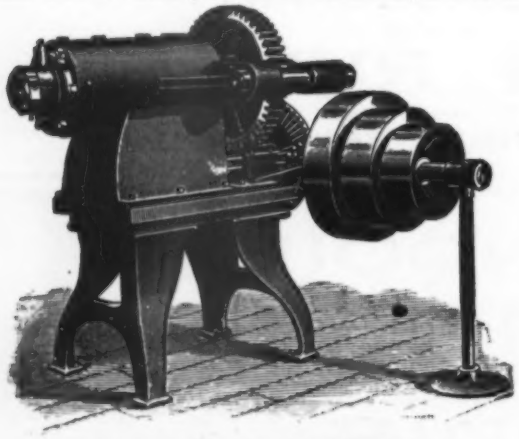
**Reliable Tubing Machine**

FOR THE MANUFACTURE OF RUBBER TUBING AND CORD,
And also the Covering of Electrical and Telephone Cables.



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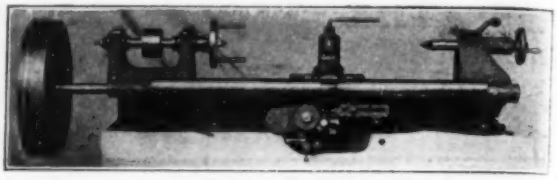

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Write for Photos and Prices of Machines.

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We build Standard and Special Machines for Exacting Requirements. Molds for Every Purpose.

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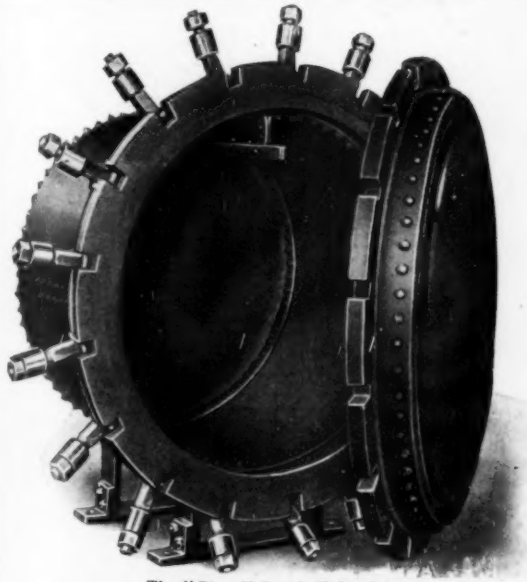
**CHICAGO: 84 Lake St.** **BUFFALO: 379 Washington St.** **PITTSBURG: 913 Liberty Ave.** **BRISTOL, R. I.**



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## VULCANIZERS AND DEVULCANIZERS

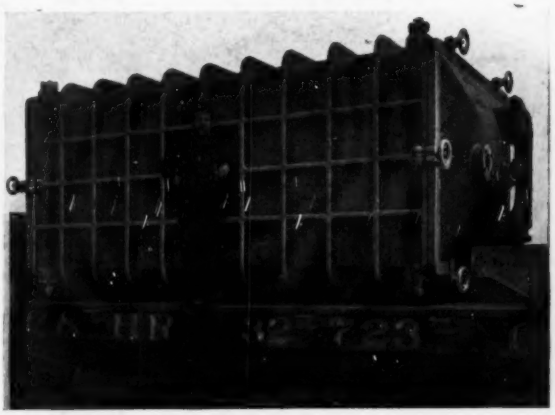
Saturating Pots, Mixers, Light and Heavy Plate Work of Every Description. Repair Outfits.

Let us figure on your requirements.

**BIGGS BOILER WORKS CO.**
**Akron, Ohio, U. S. A.**

## VACUUM DRYERS FOR RUBBER

**Most Rapid System. Absolutely Dries All Kinds Rubber and Compounds**



Cut shows chamber of one of our large dryers on car ready for shipment. Note that chamber is rectangular in form, cast in one piece, and made of air furnace iron. MAINTAINS HIGHER VACUUM, THEREFORE MORE EFFICIENT.

**Improves Quality of Rubber. Rubber Washed, Dried and Worked Within a Few Hours**

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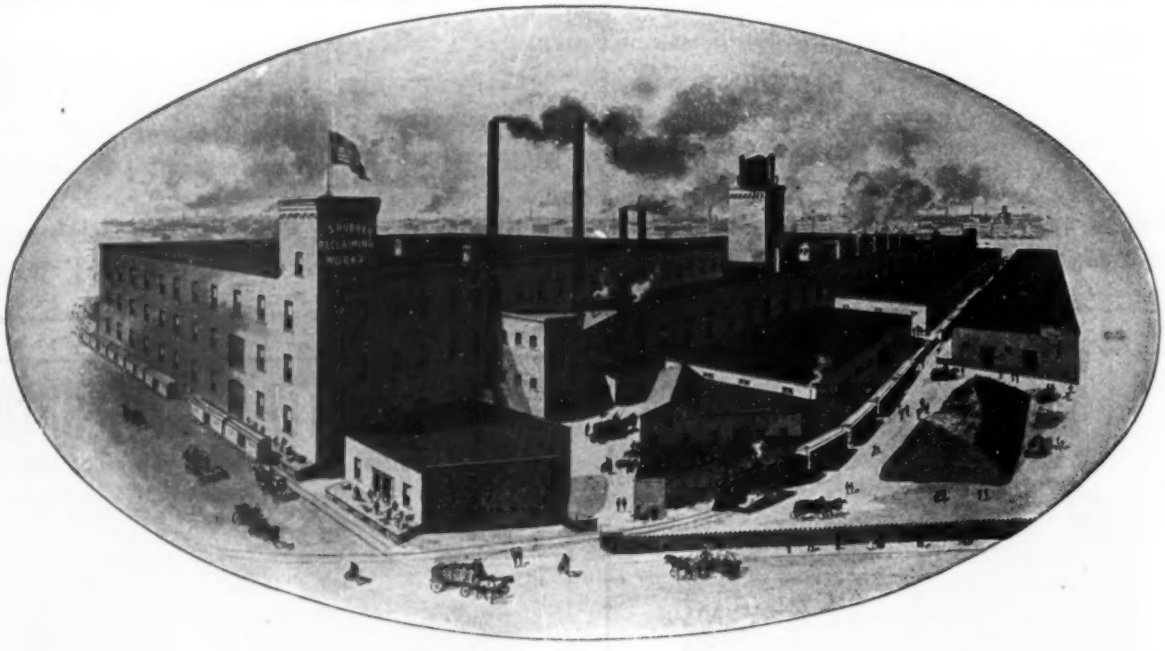
**57 WINCHESTER AVE.** **BUFFALO, N. Y.**

# U. S. Rubber Reclaiming Works

**Manufacturers of**

## RECLAIMED RUBBER



FACTORY AT BUFFALO, NEW YORK

**Offices: No. 277 BROADWAY, NEW YORK, U. S. A.**

EUROPEAN REPRESENTATIVES

**ARTHUR MEYER & COMPANY, Ltd.**

LONDON. LIVERPOOL

Boston Office: No. 79 Milk Street, ERNEST JACOBY, Representative.

*Mention The India Rubber World when you write.*

# The Publishers' Page

### *"The India Rubber World's" Home.*

HERE is a picture of the building in which THE INDIA RUBBER WORLD is housed. It seems particularly appropriate to give a view of it in this issue, because it typifies the rebuilding of New York, which, during the past twenty years, has been the most distinctive feature of the city. There were no "skyscrapers" in New York when THE INDIA RUBBER WORLD had its beginning. As the paper grew in years its habitat was changed from time to time, as happened to be made necessary by the progress of rebuilding. It does not seem probable today that another removal, from any such cause, will become necessary during the lifetime of the present management—but who can tell when our neighbors across the street may elect to put up a seventy-five story building, and thereby shut out the light from the editorial windows? The growth of New York, by the way, has represented the growth of the country at large, including that of the india rubber industry—and, may we say, of THE INDIA RUBBER WORLD.

* * *

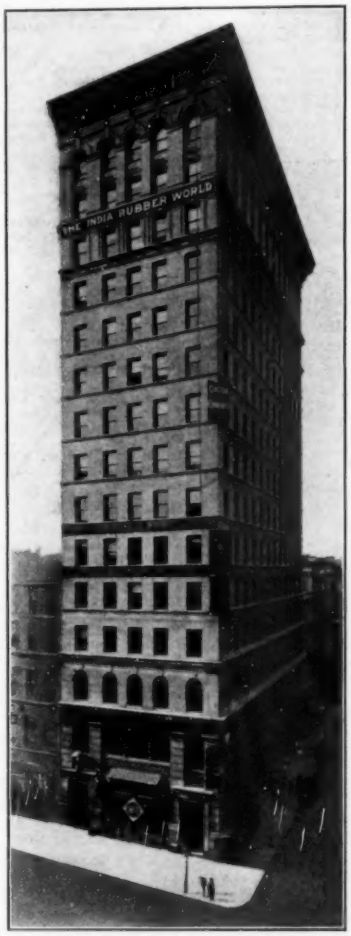
### *Our Early Neighbors.*

OUR Editor, not boastfully, on another page, has referred to the existence of the management of THE INDIA RUBBER WORLD for twenty years without change. There are not many rubber factories or stores in the country of which the same can be said, though, as the Editor has pointed out, living twenty years is in itself no great merit. All the early neighbors of THE INDIA RUBBER WORLD, if still living, have dispersed for reasons similar to those which have caused us to seek new quarters. Then we were near to the desk of John Haven Cheever, founder and head of the New York Belting and Packing Co., and the fountain head of no end of information relating to the india-rubber interest. Mr. Cheever long since passed to his rest, and the building he occupied is supplanted by one twenty stories higher. But Mr. Cheever's company endures, and the industry which he helped to found profits every day by the example which he set for his successors.

* * *

### *Working for the Future.*

THE lesson to be learned from Cheever and his contemporaries is that we should work for the future as well as for today. The man who succeeds at the moment is a failure in the end if he does not contribute to the common good of the business or industry in which he is engaged. His own business he hopes to build into a permanent institution; if this hope should not be realized, at least his work should help to make of his industry or trade a permanent factor for good in the life of his country. Our nearest neighbor in the early days achieved this ideal; the management of THE INDIA RUBBER WORLD work in the hope of being successful in the same way.




"THE INDIA RUBBER WORLD'S" HOME.

[The building in the upper part of which we are housed fronts on Broadway—Nos. 395-399. It extends back for a long way on Walker street, west of Broadway.]

### *Early Encouragement.*

THERE were advertisements in the first issue of this paper—if there hadn't been the paper would soon have fallen out of the running. But what was more gratifying—and this is "on the level"—was the series of letters in the second issue, under the heading "What They Say of Us." Wasn't it encouraging when the late George B. Hodgman wrote, of his own accord: "I like the paper immensely, and I think it will pay both you and your advertisers." Of course it was encouraging, and today the management take off their hats to those early friends of the paper who so generously lent their favor and support in so many ways to the then struggling new enterprise. They builded better than they knew, in that every encouraging word helped to make the paper what it is today, whether good, bad, or indifferent.

* * *

### *"Still on the List."*

SPEAKING of advertisements, it certainly is interesting to look over the first number of THE INDIA RUBBER WORLD and note the earliest patrons of the paper. They are still on the list! Could anything be more encouraging? There are firms, important in the trade, who hold the same advertising positions today that they contracted for in the initial number; there are certain pages and half pages and quarter pages which have been "pre-empted" from the beginning. And if certain other original advertisers are no longer on the list, it may be that they have been absorbed in some combination—which now advertises—or that the business has come to an end through death or financial embarrassment. Likewise there were purely electrical trade advertisements in our first number—business which has been passed along to the newer journals, now numerous and able, devoted to the electrical field alone.

* * *

### *The Publisher Has the Last Word.*

BUT the substantial houses in the india-rubber trade, who first gave to the new paper the countenance of their support, have never weakened in their loyalty to THE INDIA RUBBER WORLD, and that is what makes the Twentieth Anniversary Number a possibility. Is it any wonder, then, that the management fill this page with a reference to old and lasting friends, and a word of appreciation of them.

The friends of THE INDIA RUBBER WORLD everywhere, whether old or new, and those members of the trade whose acquaintance may not have been made as yet, are welcome always at the offices of this paper. They are invited to call, whether in search of information, or to give us information, or only to favor this office with their presence. An invitation is extended, particularly to rubber men to make use of the office library, which is described in our reading pages this month.

# BUYERS' DIRECTORY OF THE RUBBER TRADE.

**Classified List of Manufacturers and Dealers in India-Rubber Goods and Rubber Manufacturers' Supplies.**

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**Gaskets.**
**Hose (Fire, Garden, Steam).**
**Mats and Matting.**
**Mould Work.**
**Packing.**
**Tubing.**
**Valves.**
**Washers.**

### Mechanical Goods Generally.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Bowers Rubber Co., San Francisco, Cal.
Canadian Rubber Co. of Montreal.
H. O. Canfield Co., Bridgeport, Conn.
Chicago Rubber Works, Chicago.
Cincinnati Rubber Mfg. Co., Cincinnati.
Cleveland Rubber Co., Cleveland, O.
Continental Caoutchouc & Gutta Percha Co., Hanover, Germany.
Continental Rubber Works, Erie, Pa.
The Dermatine Co., London.
Dunlop Tire & Rubber Goods Co., Toronto.
Empire Rubber Mfg. Co., Trenton, N. J.
Eureka Fire Hose Mfg. Co., New York.
Federal Rubber Co., Milwaukee, Wis.

### Mechanical Goods—General.—Continued.

B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Gutta Percha & Rubber Mfg. Co., Toronto.
Home Rubber Co., Trenton, N. J.
The Indiana Rubber and Insulated Wire Co., Jonesboro, Ind.
Keystone R. M. Co., Erie, Pa.
Manhattan Rubber Mfg. Co., New York.
Massachusetts Chemical Co., Walpole, Mass.
Mattson Rubber Co., Lodi, N. J.
Mechanical Rubber Co., New York.
Morgan & Wright, Detroit, Mich.
National India-Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Peerless Rubber Mfg. Co., New York.
Pirelli & Co., Milan, Italy.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Jos. Stokes Rubber Co., Trenton, N. J.
Thermoid Rubber Co., Trenton, N. J.
Voorhees Rubber Mfg. Co., Jersey City.
Western Rubber Co., Goshen, Ind.

### Air Brake Hose.

Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Acme Rubber Mfg. Co., Trenton.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.

### Air Brake Hose—Continued.

Home Rubber Co., Trenton, N. J.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Belting (Canvas).

Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Eureka Fire Hose Mfg. Co., New York.
The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston-New York.

### Billiard Cushions.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
New York Belting & Packing Co., Ltd.
New York Rubber Co., New York.
Revere Rubber Co., Boston-New York.

### Blankets—Printers'.

Peerless Rubber Mfg. Co., New York.
Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Hodgman Rubber Co., New York.

### Blankets—Printers'.—Continued.

Gustave Kush, New York.
Revere Rubber Co., Boston-New York.
Voorhees Mfg Co., Jersey City.

### Brass Stair Nosing.

F. R. Howell Brass Works, Phila., Pa.

### Brushes.

Boston Woven Hose & Rubber Co.
C. J. Bailey & Co., Boston.

### Buffers.

Boston Belting Co., Boston-New York.
Canadian Rubber Co. of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.
Massachusetts Chemical Co., Walpole, Mass.
Mattson Rubber Co., Lodi, N. J.
National India Rubber Co., Bristol, R. I.
Revere Rubber Co., Boston-New York.
Voorhees Rub. Mfg. Co., Jersey City.

### Card Cloths.

Canadian Rubber Co. of Montreal.
Mechanical Fabric Co., Providence, R. I.

### Carriage Mats.

Continental Rubber Works, Erie, Pa.
Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.

# RUBBER BUYERS' DIRECTORY—Continued.

### Carriage Mats.—Continued.

Home Rubber Co., Trenton, N. J.
Massachusetts Chemical Co., Walpole, Mass.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston—New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Cord (Pure Rubber).

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Boston Woven Hose & Rubber Co.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Davol Rubber Co., Providence, R. I.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Deckle Straps.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.
Mechanical Rubber Co., Chicago.
New York Belting & Packing Co., N. Y.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.

### Door Springs.

Hodgman Rubber Co., New York.

### Dredging Sleeves.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Voorhees Rub. Mfg. Co., Jersey City.

### Force Cups.

The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Hodgman Rubber Co., New York.
Mattson Rubber Co., Lodi, N. J.
National India Rubber Co., Bristol, R. I.

### Fruit Jar Rings.

Acme Rubber Mfg. Co., Trenton.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Empire Rubber Mfg. Co., Trenton, N. J.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Rubber Products Co., Barberton, O.
New York Belting & Packing Co., N. Y.

### Fuller Balls.

Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Jenkins Bros., New York.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Rubber Products Co., Barberton, O.

### Gage Glass Washers.

Boston Belting Co., Boston, Mass.
Canadian Rubber Co. of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Jenkins Bros., New York.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
Mechanical Rubber Co., Chicago, Ill.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Revere Rubber Co., Boston, Mass.
Jos. Stokes Rubber Co., Trenton, N. J.
Voorhees Rubber Mfg. Co., Jersey City, N. J.

### Gas-Bags (Rubber).

Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
National India Rubber Co., Bristol, R. I.
Peerless Rubber Mfg. Co., New York.
Tyer Rubber Co., Andover, Mass.
Voorhees Rubber Mfg. Co., Jersey City.

### Gasket Tubing.

Boston Belting Co., Boston—New York.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Jenkins Bros., New York.
Manhattan Rubber Mfg. Co., New York.
National India Rubber Co., Bristol, R. I.
New Jersey Car Spring & Rubber Co.
Revere Rubber Co., Boston—New York.
Voorhees Rub. Mfg. Co., Jersey City.

### Grain Drill Tubes.

Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.

### Hat Bags.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
Mechanical Rubber Co., Chicago.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Voorhees Rub. Mfg. Co., Jersey City.

### Horse Shoe Pads.

Canadian Rubber Co. of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Continental Rubber Works, Erie, Pa.
Home Rubber Co., Trenton, N. J.
Keystone R. M. Co., Erie, Pa.
Manhattan Rubber Mfg. Co., New York.
Peerless Rubber Mfg. Co., New York.
Plymouth Rubber Co., Stoughton, Mass.
Revere Rubber Co., Boston—New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Hose—Wire Wound.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Hose Core.

Alderfer Crate Co., Sharon Center, O.

### Hose Pipes, Nozzles, Couplings and Fittings.

W. D. Allen Mfg. Co., Chicago.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Eureka Fire Hose Mfg. Co., New York.
F. R. Howell Brass Works, Phila., Pa.
Revere Rubber Co., Boston.
A. Schrader's Son, Inc., New York.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.

### Hose Linings.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Boston Woven Hose & Rubber Co.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston—New York.
Voorhees Rub. Mfg. Co., Jersey City.

### Hose Racks and Reels.

W. D. Allen Mfg. Co., Chicago.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
New York Belting & Packing Co., N. Y.
Wirt & Knox Mfg. Co., Philadelphia.

### Hose—Rubber Lined.

Cotton and Linen.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Boston Woven Hose & Rubber Co.
Gutta Percha & Rubber Mfg. Co., N. Y.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Empire Rubber Mfg. Co., Trenton, N. J.
Eureka Fire Hose Mfg. Co., New York.
Fabric Fire Hose Co., New York.
B. F. Godorich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Gutta Percha & Rubber Mfg. Co. of Toronto.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Jos. Stokes Rubber Co., Trenton, N. J.
Voorhees Rubber Mfg. Co., Jersey City.

### Hose—Submarine.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
A. Schrader's Son, Inc., New York.
Voorhees Rub. Mfg. Co., Jersey City.

### Hose Bands, Straps & Menders.

W. D. Allen Mfg. Co., Chicago.
Boston Woven Hove & Rubber Co.
F. R. Howell Brass Works, Phila., Pa.
A. Schrader's Son, Inc., N. Y.
William Yerdon, Fort Plain, N. Y.

### Lawn-Hose Supporters.

W. D. Allen Mfg. Co., Chicago.
C. J. Bailey & Co., Boston.

### Lawn Sprinklers.

Boston Woven Hose & Rubber Co.
Canadian Rubber Co., of Montreal.

### Mallets (Rubber).

Boston Belting Co., Boston—New York.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Keystone R. M. Co., Erie, Pa.
Manhattan Rubber Mfg. Co., New York.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston—New York.

### Mould Work.

(See Mechanical Rubber Goods.)

H. O. Canfield Co., Bridgeport, Ct.
Canton Rubber Co., Canton, O.
Cincinnati R. M. Co., Cincinnati, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Akron, O.
Hodgman Rubber Co., New York.
Massachusetts Chemical Co., Walpole, Mass.
Mattson Rubber Co., Lodi, N. J.
Morgan & Wright, Detroit, Mich.
Plymouth Rubber Co., Stoughton, Mass.
Tyer Rubber Co., Andover, Mass.

### Oil Well Supplies.

Boston Belting Co., Boston—New York.
Boston Woven Hose & Rubber Co.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—Pittsburgh.
Voorhees Rubber Mfg. Co., Jersey City.

### Packing.

(See Mechanical Rubber Goods.)

Jenkins Bros., New York.
Mattson Rubber Co., Lodi, N. J.

### Paper Machine Rollers.

Boston Belting Co., Boston—New York.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Manhattan Rubber Mfg. Co., New York.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Plumbers' Supplies.

Canadian Rubber Co. of Montreal.
H. O. Canfield Co., Bridgeport, Ct.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
Republic Rubber Co., Youngstown, O.
Voorhees Rub. Mfg. Co., Jersey City.
Western Rubber Works, Goshen, Ind.

### Pump Valves.

(See Mechanical Rubber Goods.)

Jenkins Bros., New York.
Mattson Rubber Co., Lodi, N. J.
Massachusetts Chemical Co., Walpole, Mass.

### Rock Drill Couplings.

F. R. Howell Brass Works, Phila., Pa.

### Rolls—Rubber Covered.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
Mechanical Rubber Co., Chicago.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Plymouth Rubber Co., Stoughton, Mass.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Voorhees Rub. Mfg. Co., Jersey City.

### Sewing Machine Rubbers.

Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.

### Springs—Rubber.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
Massachusetts Chemical Co., Walpole, Mass.
Mattson Rubber Co., Lodi, N. J.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Plymouth Rubber Co., Stoughton, Mass.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston—New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Stair Treads.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston—New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co., of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
Massachusetts Chemical Co., Walpole, Mass.

# RUBBER BUYERS' DIRECTORY—Continued.

### Stair Treads—Continued.

National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

### Thread.

B. F. Goodrich Co., Akron, O.
Mechanical Fabric Co., Providence, R. I.
Revere Rubber Co., Boston-New York.

### Tiling.

American Hard Rubber Co., N. Y.
Canadian Rubber Co. of Montreal, Ltd.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Voorhees Rubber Mfg. Co., Jersey City.

### Tubing.

(See Mechanical Rubber Goods.)
American Hard Rubber Co., New York.
Boston W. H. & R. Co., Boston.
Cincinnati R. M. Co., Cincinnati, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
Mattson Rubber Co., Lodi, N. J.
Plymouth Rubber Co., Stoughton, Mass.
Rubber Products Co., Barberton, O.
Star Rubber Co., Akron, O.
Tyer Rubber Co., Andover, Mass.
Voorhees Rub. Mfg. Co., Jersey City.

### Valve Balls.

Boston Belting Co., Boston.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Jenkins Bros., New York.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
Mechanical Rubber Co., Chicago.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.

### Valve Discs.

American Hard Rubber Co., New York.
Boston Belting Co., Boston-New York.
Cincinnati R. M. Co., Cincinnati, O.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Jenkins Bros., N. Y.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Western Rubber Works, Goshen, Ind.

### Valves.

(See Mechanical Rubber Goods.)
Jenkins Bros. New York-Chicago.
Mattson Rubber Co., Lodi, N. J.

### Vulcanite Emery Wheels.

Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., Ltd., New York.

### Wringer Rolls.

Canadian Rubber Co., of Montreal.
Cincinnati R. M. Co., Cincinnati, O.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co., Lodi, N. J.
New York Belting & Packing Co., N. Y.
Republic Rubber Co., Youngstown, O.

## DRUGGISTS' AND STATIONERS' SUNDRIES.

Atomizers. Nipples.
Bandages. Syringes.
Bulbs. Water Bottles.
Druggists' Sundries, Generally.

American Hard Rubber Co., New York.
C. J. Bailey & Co., Boston.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Canton Rubber Co., Canton, O.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
Luserne Rubber Co., Trenton, N. J.
Mass. Chemical Co., Walpole, Mass.
National India Rubber Co., Bristol, R. I.
Parker, Stearns & Co., N. Y.
Pirelli & Co., Milan, Italy.
Rubber Products Co., Barberton, O.
Seamless Rubber Co., New Haven, Ct.
Star Rubber Co., Akron, O.
Tyer Rubber Co., Andover, Mass.
Walpole Rubber Co., Granby, P. Q.
Walpole Rubber Works, Walpole, Mass.
Western Specialty Mfg. Co., N. Y.

### Balls, Dolls and Toys.

New York Rubber Co., New York.

### Combination Fountain Syringe and Hot Water Bottle Fixtures.

A. Schrader's Son, Inc., N. Y.

### Combs.

American Hard Rubber Co., New York.

### Elastic Bands.

Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York-Boston.
Tyer Rubber Co., Andover, Mass.

### Electrician Gloves.

Star Rubber Co., Akron, O.

### Erasive Rubbers.

Davidson Rubber Co., Boston.
B. F. Goodrich Co., Akron, O.

### Finger Cots.

Canton Rubber Co. Canton, O.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence.
Faultless Rubber Mfg. Co., Akron, O.
B. F. Goodrich Co., Akron, O.
The Rubber Products Co., Barberton, O.
Star Rubber Co., Akron, O.

### Gloves.

Canadian Rubber Co. of Montreal.
Canton Rubber Co., Canton, O.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
National India Rubber Co., Bristol, R. I.
Rubber Products Co., Barberton, O.
Star Rubber Co., Akron, O.

### Hard Rubber Goods.

American Hard Rubber Co., New York.
Canadian Rubber Co. of Montreal.
Davidson Rubber Co., Boston.
H. O. Canfield Co., Bridgeport, Ct.
Davol Rubber Co., Providence, R. I.
Luserne Rubber Co., Trenton, N. J.
Stokes Rubber Co., Joseph, Trenton, N. J.
Tyer Rubber Co., Andover, Mass.

### Hospital Sheetings.

Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.
Plymouth Rubber Co., Stoughton, Mass.
Tyer Rubber Co., Andover, Mass.

### Hot Water Bottle Stoppples.

A. Schrader's Son, Inc., N. Y.

### Ice Bags and Ice Caps.

Canton Rubber Co., Canton, O.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
National India Rubber Co., Bristol, R. I.
The Rubber Products Co., Barberton, O.
Star Rubber Co., Akron, O.
Tyer Rubber Co., Andover, Mass.

### Life Preservers.

Davol Rubber Co., Providence.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

### Shower Bath Sprinklers.

Davol Rubber Co., Providence.
A. Schrader's Son, Inc., New York.

### Sponges (Rubber).

Faultless Rubber Co., Ashland, O.
N. Tire Rubber Sponge Co., Chicago.

### Stationers' Sundries.

American Hard Rubber Co., New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York-Boston.
Seamless Rubber Co., New Haven, Ct.
Tyer Rubber Co., Andover, Mass.

### Stopples (Metal).

A. Schrader's Son, Inc., N. Y.

### Stopples (Rubber).

Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., New York.
Manhattan Rubber Mfg. Co., New York.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., N. Y.
Tyer Rubber Co., Andover, Mass.

### Throat Bags.

Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
National India Rubber Co., Bristol, R. I.
Tyer Rubber Co., Andover, Mass.

### Tobacco Pouches.

Canadian Rubber Co. of Montreal.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
The Rubber Products Co., Barberton, O.
Tyer Rubber Co., Andover, Mass.

## MACKINTOSHED AND SURFACE GOODS.

### Air Goods (Rubber).

Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
New York Rubber Co., New York.
National India Rubber Co., Providence.
Rubber Products Co., Barberton, O.
Tyer Rubber Co., Andover, Mass.

### Air Mattresses.

Canadian Rubber Co. of Montreal.
Mechanical Fabric Co., Providence, R. I.
National India Rubber Co., Bristol, R. I.

### Barbers' Bibs.

Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
Tyer Rubber Co., Andover, Mass.

### Bathing Caps.

Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Rubber Products Co., Barberton, O.

### Bellows Cloths.

Boston Rubber Co., Boston.
Cleveland Rubber Co., Cleveland, O.
Hodgman Rubber Co., New York.

### Calendering.

Plymouth Rubber Co., Stoughton, Mass.

### Carriage Ducks and Drills.

Acme Rubber Mfg. Co., Trenton, N. J.
Cleveland Rubber Co., Cleveland, O.
Empire Rubber Mfg. Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., Toronto.
National India Rubber Co., Bristol, R. I.

### Clothing.

Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Gutta Percha & Rubber Mfg. Co. of Toronto.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.
Pirelli & Co., Milan, Italy.

### Cravenette.

Cravenette Co., Ltd.

### Diving Apparatus.

A. Schrader's Son, Inc., New York.
Hodgman Rubber Co., New York.

### Horse Covers.

Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R.I.

### Leggings.

Cleveland Rubber Co., Cleveland, O.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

### Mackintoshes.

(See Clothing.)

### Proofing.

Canadian Rubber Co of Montreal.
Plymouth Rubber Co., Stoughton, Mass.

### Rain Coats.

Cravenette Co., Ltd.

### Rubber Coated Cloths.

Mechanical Fabric Co., Providence, R. I.

## RUBBER FOOTWEAR.

### Boots and Shoes.

American Rubber Co., Boston.
Boston Rubber Shoe Co., Boston.
Canadian Rubber Co. of Montreal.
L. Candee & Co., New Haven, Conn.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co. of Toronto.
Hood Rubber Co., Boston.
Lycoming Rubber Co., Williamsport, Pa.
Meyer Rubber Co., New York.
National India Rubber Co., Boston.
United States Rubber Co., New York.
Wales-Goodyear Rubber Co., Boston.
Woonsocket Rubber Co., Providence.

### Heels and Soles.

Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Continental Caoutchouc & Gutta Percha Co., Hanover.
Foster Rubber Co., Boston.
The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.
Massachusetts Chemical Co., Walpole, Mass.
Plymouth Rubber Co., Stoughton, Mass.
Western Rubber Works, Goshen, Ind.

### Tennis Shoes.

American Rubber Co., Boston.
Boston Rubber Shoe Co., Boston.
The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.
National India Rubber Co., Providence.
United States Rubber Co., New York.

### Wading Pants.

Canadian Rubber Co. of Montreal.
Hodgman Rubber Co., New York.

## DENTAL AND STAMP RUBBER.

### Dental Gum.

American Hard Rubber Co., New York.
Cleveland Rubber Co., Cleveland, O.
Tyer Rubber Co., Andover, Mass.

### Rubber Dam.

Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
Tyer Rubber Co., Andover, Mass.

### Stamp Gum.

B. F. Goodrich Co., Akron, O.
Mattson Rubber Co., Lodi, N. J.
Mechanical Rubber Co., Chicago, Ill.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.

## ELECTRICAL.

### Electrical Supplies.

American Hard Rubber Co., New York.
Joseph Stokes Rubber Co., Trenton, N. J.
Massachusetts Chemical Co., Boston.
Mattson Rubber Co., Lodi, N. J.
Tyer Rubber Co., Andover, Mass.

### Friction Tape.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
B. F. Goodrich Co., Akron, O.
Home Rubber Co., Trenton, N. J.
Massachusetts Chemical Co., Boston.
Mechanical Rubber Co., Chicago.
National India Rubber Co., Bristol, R. I.
Revere Rubber Co., Boston-New York.

### Hard Rubber Goods.

American Hard Rubber Co., New York.
Canadian Rubber Co. of Montreal.
Luserne Rubber Co., Trenton, N. J.
Joseph Stokes Rubber Co., Trenton, N. J.

# RUBBER BUYERS' DIRECTORY—Continued.

### Insulating Compounds.

Canadian Rubber Co. of Montreal.
Gutta Percha & Rubber Mfg. Co., Toronto.
Massachusetts Chemical Co., Boston.

### Insulated Wire and Cables.

Acme Rubber Mfg. Co., Trenton, N. J.
W. R. Brixey, New York.
The Indiana Rubber and Insulated Wire Co., Jonesboro, Ind.
National India Rubber Co., Providence.

### Insulated Wire Waxes.

American Wax Co., Boston.

### Splicing Compounds.

Boston W. H. & R. Co., Boston.
Home Rubber Co., Trenton, N. J.
Massachusetts Chemical Co., Walpole, Mass.

## SPORTING GOODS.

### Foot Balls.

Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

### Golf Balls.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Davidson Rubber Co., Boston.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.

### Sporting Goods.

Canadian Rubber Co. of Montreal.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
Tyer Rubber Co., Andover, Mass.

### Striking Bags.

Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Rubber Products Co., Barberton, O.

### Submarine Outfits.

Hodgman Rubber Co., New York.
A. Schrader's Sons, Inc., New York.

## MISCELLANEOUS.

### Boxes (Wood).

Henry H. Sheip & Co., Philadelphia.

### Brass Fittings.

A. Schrader's Son, New York.

### Cement (Rubber).

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.
Manhattan Rubber Mfg. Co., New York.
Massachusetts Chemical Co., Walpole, Mass.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.

### Chemists.

Chute, H. O., New York.
Maywald, F. J., New York.
Stephen P. Sharples, Boston, Mass.

### Consulting Engineers.

Akron Rubber Engineering Co., Akron, O.

### Rubber Journals.

Gummi-Zeitung, Dresden, Germany.
L'Agriculture des Pays Chauds, France.

### Rubber Tree Seeds.

J. P. William & Bros., Heneratgoda, Ceylon.

### Tapping Tools.

G. Van den Kerckhove, Brussels, Belgium.

### Valves for Air Goods.

A. Schrader's Son, Inc., New York.

# MACHINERY AND SUPPLIES FOR RUBBER MILLS.

## RUBBER MACHINERY.

### Acid Tanks.

Birmingham Iron Foundry, Derby, Conn.

### Band Cutting Machines.

A. Adamson, Akron, O.
Birmingham Iron Foundry, Derby, Conn.

### Belt Folding Machines.

Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.

### Belt Slitters.

### Cloth Dryers.

### Gearing.

### Shafting.

### Wrapping Machines.

Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.

### Belt Stretchers.

Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Hoggson & Pettis Mfg. Co., New Haven.

### Boilers.

William R. Thropp, Trenton, N. J.
John E. Thropp & Sons Co., Trenton, N. J.

### Braiders.

New England Butt Co., Providence, R. I.

### Calenders.

Birmingham Iron Foundry, Derby, Conn.
David Bridge & Co., Castleton, Manchester, Eng.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

### Castings.

A. Adamson, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.

### Chucks (Lathe).

Hoggson & Pettis Mfg. Co., New Haven.

### Churns.

American Tool & Machine Co., Boston.

### Clutches.

Farrel Foundry & Mach. Co., Ansonia, Conn.

### Crackers.

Birmingham Iron Foundry, Derby, Conn.

### Devulcanizers.

Biggs Boiler Works Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Edred W. Clark, Hartford, Conn.
John E. Thropp & Sons Co., Trenton, N. J.
William R. Thropp, Trenton, N. J.

### Dies.

Hoggson & Pettis Mfg. Co., New Haven.

### Doubling Machines.

American Tool & Machine Co., Boston.

### Drying Machines.

Buffalo Foundry & Machine Co., Buffalo, N. Y.
David Bridge & Co., Castleton, Manchester, Eng.
Joseph P. Devine, Buffalo, N. Y.
Birmingham Iron Foundry, Derby, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

### Embossing Calenders.

Textile-Finishing Machinery Co., Providence, R. I.

### Engine Steam.

William R. Thropp, Trenton, N. J.
John E. Thropp & Sons Co., Trenton, N. J.

### Engraving Rolls.

Hoggson & Pettis Mfg. Co., New Haven.

### Grinders and Mixers.

Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
John E. Thropp & Sons Co., Trenton, N. J.
William R. Thropp, Trenton, N. J.

### Hangers.

Farrel Foundry & Mach. Co., Ansonia, Conn.

### Hose Machines.

A. Adamson, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
New England Butt Co., Providence, R. I.

### Hydraulic Accumulators.

Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
John E. Thropp & Sons Co., Trenton, N. J.

### Insulating Machinery.

John Royle & Sons, Paterson, N. J.

### Lathes—Hard Rubber.

A. Adamson, Akron, O.

### Lathes—Jar Ring.

A. Adamson, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
John E. Thropp & Sons Co., Trenton, N. J.
William R. Thropp, Trenton, N. J.

### Machinists' Tools.

Hoggson & Pettis Mfg. Co., New Haven.

### Moulds.

A. Adamson, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Continental Rubber Works, Erie, Pa.
Hoggson & Pettis Mfg. Co., New Haven.
John E. Thropp & Sons Co., Trenton, N. J.
Williams Foundry & Machine Co., Akron, O.

### Pillow Blocks.

Farrel Foundry & Mach. Co., Ansonia, Conn.

### Presses (for Rubber Work).

A. Adamson, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Boomer & Boschert Press Co., Syracuse, N. Y.
Edred W. Clark, Hartford, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
John E. Thropp & Sons Co., Trenton, N. J.
William R. Thropp, Trenton, N. J.
Williams Foundry & Machine Co., Akron, O.

### Pumps.

Birmingham Iron Foundry, Derby, Conn.
Boomer & Boschert Press Co., Syracuse.
Farrel Foundry & Mach. Co., Ansonia, Conn.

### Racks for Boot and Shoe Cars.

Hoggson & Pettis Mfg. Co., New Haven.

### Reducing Valves.

Mason Regulator Co., Boston.

### Rollers (Hand).

Hoggson & Pettis Mfg. Co., New Haven.

### Rubber Covering Machines.

New England Butt Co., Providence, R. I.

### Separators.

Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

### Spreaders.

American Tool & Machine Co., Boston.
Birmingham Iron Foundry, Derby, Conn.
New England Butt Co., Providence, R. I.

### Steam Traps and Specialties.

Jenkins Bros., New York.
Mason Regulator Co., Boston.

### Steel Stamps.

Hoggson & Pettis Mfg. Co., New Haven.

### Stichers (Hands).

Hoggson & Pettis Mfg. Co., New Haven.

### Strip Covering Machines.

### Strip Cutters.

New England Butt Co., Providence, R. I.

### Tire Molds.

John E. Thropp & Sons Co., Trenton, N. J.
Williams Foundry & Machine Co., Akron, O.

### Tubing Machines.

A. Adamson, Akron, O.
Edred W. Clark, Hartford, Conn.
John Royle & Sons, Paterson, N. J.
Williams Foundry & Machine Co., Akron, O.

### Vacuum Drying Chambers.

Buffalo Foundry & Machine Co., Buffalo, N. Y.
Joseph P. Devine Co., Buffalo, N. Y.

### Varnishing Machines.

Birmingham Iron Foundry, Derby, Conn.

### Vulcanizers.

Biggs Boiler Works Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
John E. Thropp's Sons Co., Trenton, N. J.
William R. Thropp, Trenton, N. J.

### Washers.

Birmingham Iron Foundry, Derby, Conn.
David Bridge & Co., Castleton, Manchester, Eng.
Farrel Foundry & Machine Co., Ansonia, Conn.
John E. Thropp & Sons Co., Trenton, N. J.
William R. Thropp, Trenton, N. J.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

### Wire Insulating Machines.

New England Butt Co., Providence, R. I.
John Royle & Sons, Paterson, N. J.

## SECOND-HAND MACHINERY.

W. C. Coleman Co., Boston.
Philip McGrory, Trenton, N. J.
M. Norton & Co., Charlestown, Mass.

## FACTORY SUPPLIES.

### Aluminum Flake.

Aluminum Flake Co., Akron, O.

### Antimony, Sulphurets of.

Golden.

Actien-Ges. Georg Egestorff's Salzwerke Linden, Germany.
Atlas Chemical Co., Newtonville, Mass.

Golden and Crimson.

Joseph Cantor, New York.

Golden and Crimson.

Wm. H. Scheel, New York.

## MACHINERY AND SUPPLIES FOR RUBBER MILLS—Continued.

**Antimony, Sulphurets of.—Continued.**

**Artificial Rubber.**
National Co., Chicago.
Stamford (Conn.) Rubber Supply Co.
Typke & King, London, England.

**Balata.**
George A. Alden & Co., Boston.

**Barytes.**
Gabriel & Schall, New York.

**Benzol.**
Barrett Mfg. Co., Philadelphia.
Samuel Cabot, Boston.

**Black Hypo.**
Joseph Cantor, New York.
William H. Scheel, New York.
Typke & King, London, England.

**Carbon Bisulphide.**
George W. Speaight, New York.

**Chemicals.**
George W. Speaight, New York.
S. P. Wetherill Co., Philadelphia, Pa.

**Colors.**
Joseph Cantor, New York.
William H. Scheel, New York.
Typke & King, London, England.
S. P. Wetherill Co., Philadelphia, Pa.

**Crude Rubber.**
George A. Alden & Co., Boston.
W. C. Coleman Co., Boston.
Wallace L. Gough Co., New York.
Hagermeyer & Brunn, New York.
Adolph Hirsch & Co., New York.
Rubber Trading Co., New York-Boston.

**Dermatine.**
The Dermatine Co., London.

**Ducks and Drills (Cotton).**
J. H. Lane & Co., New York.

**Fossil Flour.**
Oxford-Tripoli Co., Ltd., N. Y.

**Gilsonite.**
William H. Scheel, New York.

**Graphite Grease.**
Jos. Dixon Crucible Co., Jersey City.

**Guayule Rubber.**
Continental Rubber Co.
Ed. Maurer, New York.

**Gutta-Percha.**
George A. Alden & Co., Boston.
W. C. Coleman Co., Boston.
Rubber Trading Co., New York-Boston.

**Hydro-Carbon Products.**
Geo. A. Alden & Co., Boston.
American Wax Co., Boston.
William H. Scheel, New York.
Raven Mining Co., Chicago.

**Infusorial Earth.**
Oxford-Tripoli Co., Ltd., N. Y.
Stamford (Conn.) Rubber Supply Co.

**Kapak.**
Raven Mining Co., Chicago.

**Lampblack.**
Samuel Cabot, Boston.

**Lead—Blue.**

**Lead—Sublimed White.**
Picher Lead Co., Chicago, Ill.
St. Louis Smelting & Refining Co., St Louis.

**Lithopone.**
Gabriel & Schall, New York.

**Mineral Rubber.**
Geo. A. Alden & Co., Boston.
American Wax Co., Boston.

**Paris White and Whiting.**
Queensgate Whiting Co., Ltd.
H. P. Taintor Mfg. Co., New York.

**Reclaimed Rubber.**
Alkali Rubber Co., Akron, O.
F. H. Appleton & Son, Boston.
Bloomingdale (N. J.) Soft Rubber Co.
E. H. Clapp Rubber Co., Boston, Mass.
W. C. Coleman Co., Boston.
Continental Rubber Works, Erie, Pa.
Dauversport Rubber Co. Boston.
Eastern Rubber Co., New York.
New Jersey Rubber Co., Lambertville, N. J.
Pequanoc Rubber Co., Butler, N. J.
Philadelphia Rubber Works, Philadelphia.
Rickaby Rubber Mfg. Co., South Framingham, Mass.
Stockton Rubber Co., Stockton, N. J.
Jos. Stokes Rubber Co., Trenton, N. J.
S. & L. Rubber Co., Chester, Pa.
U. S. Rubber Co., Chester, Pa.
U. S. Rubber Reclaiming Works, N. Y.
Westmoreland Rubber Mfg. Co., Grapeville, Pa.

**Agents and Dealers.**
Philip McGrory, Trenton, N. J.
H. P. Moorhouse, Paris, France.
Rubber Trading Co., New York-Boston.
Wm. Somerville's Sons, Liverpool.

**Rubber Flux.**
Massachusetts Chemical Co., Walpole, Mass.

**Rubber Makers, White.**
Grasselli Chemical Co., N. Y.

**Scrap Rubber.**
Bers & Co., Philadelphia.
S. Birkenstein & Sons, Chicago.
W. C. Coleman Co., Boston.
Wm. H. Cummings & Sons, New York.
Theodore Hofeller & Co., Buffalo, N. Y.
M. Kaufman, Chicago.
B. Loewenthal & Co., New York and Chicago.
Philip McGrory, Trenton, N. J.
Meyer Bros., Philadelphia, Pa.
M. Norton & Co., Charlestown, Mass.
J. Schnurmann, London.
Schwab & Co., Philadelphia.
Trenton Scrap Rubber Supply Co., Trenton, N. J.
United States Waste Rubber Co., Brockton, Mass.
M. J. Wolpert, Odessa, Russia.

**Substitute.**
T. C. Ashley & Co., Boston.
Joseph Cantor, New York.
Carter, Bell Mfg. Co., New York.
Corn Products Refining Co., New York.
Massachusetts Chemical Co., Boston.
The Rubber Chemical Co., Birmingham, England.
Wm. H. Scheel, New York.
Stamford (Conn.) Rubber Supply Co.
Typke & King, London, England.
Wing & Co., C. S., Wollaston, Mass.

**Sulphur.**
Battelle & Renwick, New York.
T. & S. C. White Co., New York.

**Sulphur Chloride.**
William H. Scheel, New York.
George W. Speaight, New York.
Stamford (Conn.) Rubber Supply Co.

**Tripoli.**
Oxford-Tripoli Co., Ltd., N. Y.

**Waxes.**
American Wax Co., Boston.

**Whiting.**
H. P. Taintor Mfg. Co., New York.

**Zinc, Oxide of.**
New Jersey Zinc Co., New York.

**Zinc Substitute.**
Aluminum Flake Co., Akron, O.

**Zinc Sulphide.**
Joseph Cantor, New York.
Typke & King, London, England.

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**Auto Top Fabrics.**
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

**Fabrics.**
Hewins, E. D., Boston.
Lane & Co., J. H., New York.
National India Rubber Co., Bristol, R. I.

**Insulated Wires.**
The Indiana Rubber and Insulated Wire Co., Jonesboro, Indiana.
National India Rubber Co., Bristol, R. I.

**Mats, Automobile.**
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
Massachusetts Chemical Co., Walpole, Mass.
National India Rubber Co., Bristol, R. I.
Revere Rubber Co., Boston, Mass.

**Repair Stock.**
Manhattan Rubber Mfg. Co., Passaic, N. J.
Mattson Rubber Co., Lodi, N. J.
Thermoid Rubber Co., Trenton, N. J.

**Rims, Wheel.**
Goodrich Co., B. F., Akron, Ohio.

**Tires.**
Bailey & Co., C. J., Boston, Mass.
Canadian Rubber Co., of Montreal, Ltd.
Continental Caoutchouc Co., New York.
Continental Rubber Works, Erie, Pa.
Dunlop Tire & Rubber Goods Co., Toronto.
Empire Rubber Mfg. Co., Trenton, N. J.
Goodrich Co., B. F., Akron, Ohio.
Gutta Percha & Rubber Mfg. Co., Toronto.
The Indiana Rubber and Insulated Wire Co., Jonesboro, Indiana.
Kokomo Rubber Co., Kokomo, Ind.
Mattson Rubber Co., Lodi, N. J.
Morgan & Wright, Detroit, Mich.
Pirelli & Co., Milan, Italy.
Springfield Tire & Rubber Co., Springfield, O.
Plymouth Rubber Co., Stoughton, Mass.
Republic Rubber Co., Youngstown, Ohio.
Thermoid Rubber Co., Trenton, N. J.

**Automobile and Carriage.**
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston-New York.
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**Tire Fabrics.**
Lane & Co., J. H., New York.

**Tire Repairing.**
Voorhees Rubber Mfg. Co., Jersey City, N. J.

**Treads.**
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
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